

Hitchcock's Machine Tool Blue Book

SEPTEMBER, 1935

THIRTIETH YEAR

\$ 24.⁵⁰

AND IT'S WORTH
IT!

COMPARE IT WITH
ALL THE OTHERS

and you will choose

SKILSAW

$\frac{1}{4}$ " SPECIAL DUTY

DRILL

SKILSAW, INC., 3304 ELSTON AVE., CHICAGO

PUBLISHED AT 508 So. DEARBORN ST. CHICAGO

... here is why!

- Die cast aluminum alloy body.
- Extra powerful Universal Motor.
- Two pole, Bakelite-enclosed, trigger type momentary switch with lock for continuous operation.
- Motor bearings—high grade ball and Amplex. Spindle bearings—needle roller and ball thrust.
- Highest quality 3-jaw geared chuck with key.
- Length overall 12 inches; net weight 4 $\frac{1}{4}$ lbs.

ALSO 13 OTHER POWERFUL MODELS

ACCURACY

FOR THE
TOOL ROOM

New!

WHITNEY
HAND MILLER



MANUFACTURED BY
W. H. NICHOLS • WALTHAM, MASS.

SPEED
FOR
PRODUCTION

Hitchcock's Machine Tool Blue Book

**Selected
Circulation**

**20,000
Monthly**

SEPTEMBER, 1935

THIRTIETH YEAR

You Can't Afford To Miss It!

The phenomenal developments of the past six years will be spread before your eyes at the Cleveland Show—all the improvements and refinements in metal-working machinery. It is practically imperative for anyone at all connected with modern production to attend. Farseeing executives will grasp this opportunity to study the latest mechanical marvels in operation, discuss their problems with attending experts, and lay plans for the future. See the next two pages.

Published By

Hitchcock Publishing Co.

508 S. Dearborn St.,

Chicago, Ill.

Consult the Classified Finding Index for your requirements

NATIONAL MACHINE

EXPOSITION HALL and
PUBLIC AUDITORIUM

CLEVELAND, OHIO

SEPTEMBER
11th—21st

THE MACHINE TOOL SHOW to be held in Cleveland, September 11-21, will be one of the nation's greatest industrial exhibitions. Over a quarter of a million square feet of exhibits—nearly 5½ acres—will make this the largest machine shop ever assembled! The vast improvements made in design, precision and capacity of machine tools and accessories during the past six years (this is the first exhibition held since 1929) are said to overshadow the cumulative advance of the preceding 20 years.

TOOL EXPOSITION—

THE 1935 SHOW will be about 50% larger than the 1929 exposition, with nearly 250 exhibitors participating. The value of the exhibits will approximate \$3,000,000. The exhibits will range from the delicate mechanisms necessary to fashion the tiniest parts of a lady's watch to the great machines that produce parts of the mightiest battleship. The majority of the exhibits will show these machines in actual operation—the most convincing method of display, and the most interesting to the visitor. It is estimated that more than 5,000 kilowatts of electrical energy will be required hourly for operation purposes alone. In addition to the machinery exhibits there will be displays of related products, accessories and lubricants.

PLAN TO ATTEND this gigantic display. Here you will be able to discuss your production problems with the greatest experts; to study and analyze actual performances; to see how modern machinery will enable you to make your product available to more people.

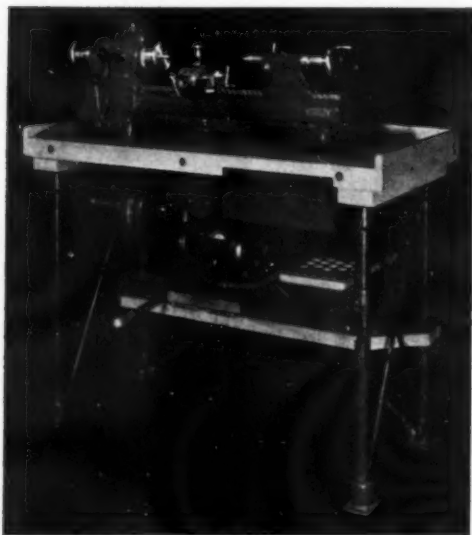
Sponsored By

THE NATIONAL MACHINE TOOL BUILDERS' ASSOCIATION

MODERN DEMANDS *h*

HARDINGE

PRECISION BENCH LATHE UNIT



For
TOOL-ROOM, PRODUCTION AND LABORATORY WORK

Write for Bulletin HL

"Cataract Precision Machine Tools Since 1890"

HARDINGE BROTHERS, INC., ELMIRA, N. Y.

have *Created These New Machines*

HARDINGE
PRECISION MILLING MACHINE



For
TOOL-ROOM PURPOSES

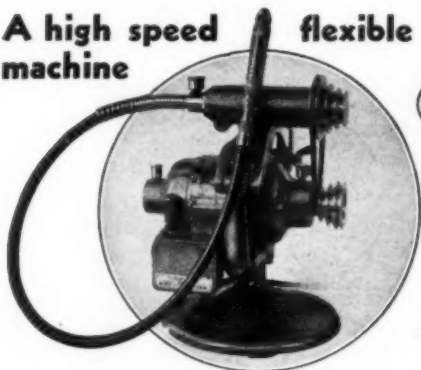
Write for Bulletin HM

"Cataract Precision Machine Tools Since 1890"

HARDINGE BROTHERS, INC., ELMIRA, N. Y.

THE KELLERFLEX JB-O

A high speed flexible shaft machine



A. C. or D. C. Universal Motor; Ball bearing thruout; four different speeds up to 10,500 R. P. M.; 360° swivel; small hand piece; and

100 DIFFERENT TOOLS



including rotary files, burs, grinding wheels, stones, felt wheels and polishing equipment.

Write for complete folder No. H. P.

PRATT & WHITNEY CO.
HARTFORD, CONN.
Keller Division



**If you are going to
the N.M.T.B.A.
MACHINE TOOL SHOW
*at Cleveland***

SEPT. 11-21

**Be sure to see the
Sundstrand Exhibit**

BOOTH 306

Seven machines in operation. First public showing
of several new developments.

**SUNDSTRAND MACHINE TOOL CO.
ROCKFORD, ILLINOIS**

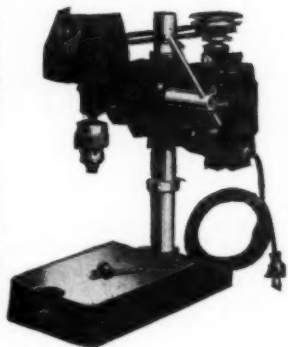
RIGIDMILS - STUB LATHES

3-Wheel Tool Grinders - Centering Machines
Balancing Tools - Bench Centers - Special Machines

for **MODERN SHOPS...**

the improved No. 13 Simplex Drill. The design of this drill has been refined and perfected to continue to meet modern production requirements efficiently.

Entire head travels up and down on the column. Spindle is stationary and forms part of the head. Mounted on two radial thrust ball bearings, it is adjustable for wear. Has a four-step sheave pulley which gives tremendous pulling power at all speeds without any slip



With special attachments, The No. 13 Simplex can be used for small tapping, grinding and polishing.

Here is a tool—simple in operation—of sturdy construction—well-suited for general utility—and at a price which is unusually reasonable!

Resale price [without motor] \$24⁰⁰

F. O. B. Buffalo

Write for bulletin 2844-A



BUFFALO FORGE COMPANY

161 Mortimer St.,

Buffalo, N. Y.

In Canada: Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

"Buffalo" No. 13 Simplex Drill

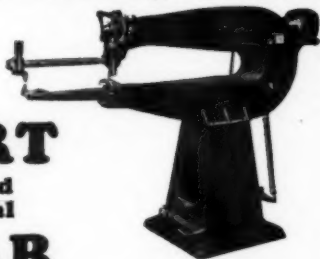
Solve YOUR Shearing Problems

**With
The
NEW**

LIBERT

**High Speed
Sheet Metal**

SHEAR



**The very latest development—using an
entirely new principle in cutting!**

WITH the LIBERT SHEAR you can cut regular or irregular shapes *rapidly* and *accurately*. Using an entirely new principle—having the top cutter fastened in a clapper box—the cutter is freed from the sheet being cut, offering no resistance to feeding or turning of the sheet, and allowing perfect shearing around template or pattern. You can trim off a 1/64" sliver with ease, there's no cramping or binding of sheet when cutting a minimum radius.

And it's as easy to cut on the inside of a plate as the outside, for there's no need to cut holes first. Every LIBERT Shear is capable of cutting metals from the thinnest shim stock up to the gauge capacity of the machine—and as fast as the operator can feed stock. By making slight changes in the frame the LIBERT can be adapted to many special jobs, such as truck fenders and radiator shell work. Let us help you with your shearing problems.

Write for Folder Giving Complete Information

**LIBERT MACHINE COMPANY
GREEN BAY, WISCONSIN**

"SHE SETS
TO PIPE SIZE
BY A MOVE
OF THIS POST"



RIGID's Easy Accurate Mechanics Mean Easy Accurate Pipe Threading

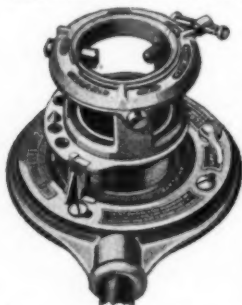
S PIN up work-holder of this **RIGID** No. 65R, move setting post under "size" wanted, spin work-holder back down. The die is set to size—to a hair.

Turn knurled ring on work-holder to same size, put die on pipe and tighten with ONE screw.

Then cut faultless threads.

Whatever size the pipe, 1" to 2", thread with same set of chasers. No chance to mix up chasers, no bother of changing them—ready in 10 seconds for any pipe. True accurate threads, over and under size, drip threads, short nipples.

*A bright, neat, powerful, efficient tool. Ask your Jobber about **RIGID** Ratchet and Poster Threaders.*



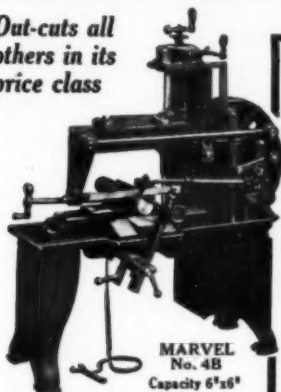
The Ridge Tool Co.
Elyria, Ohio, U. S. A.

RIGID PIPE TOOLS

See Our Private, Independent Operating Exhibit at Cleveland just a few steps from the Cleveland Auditorium, at 634 St. Clair Ave., Cleveland, O., Sept. 10th to 25th or at the

National Metal Exposition, Chicago of the American Society for Metals, International Amphitheatre, Sept. 30th to Oct. 4th.

Out-cuts all others in its price class



A Moderately Priced Hack Saw that will out-cut all others in its price class. A really good high-speed hack saw for ordinary miscellaneous or occasional work, although of course, not the equal in efficiency and stamina of our heavy-duty, full ball bearing, production models: Nos. 6, 6A, 9 and 9A.

Write for Bulletins 400 and 600

Armstrong-Blum Mfg. Co.

"The Hack Saw People"

341 N. Francisco Ave., CHICAGO, U. S. A.



The
MARVEL
Sawing Machines

General Purpose Saws

No. 1 (Capacity 6"x6")
No. 2 (Capacity 8"x8")
Extremely low priced—by far the most widely used saws.

Light Duty High Speed Saw
No. 4-B (described here)

Heavy-Duty High Speeds
No. 6 (Capacity 6"x6")
No. 9 (Capacity 10"x10")

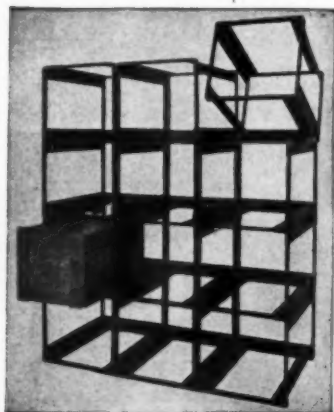
Automatic Production Saws
No. 6A (Capacity 6"x6")
No. 9A (Cap. 10"x10")

Metal-Cutting Band Saw
No. 8 (Capacity 18"x18")

A NEW MARVEL SAW

No. 18 (Capacity 18"x18") to be announced and shown for the first time at National Metal Exposition, Chicago. New principle of blade action, low pressure hydraulic feed and quick traverse. A 5,000 lb. giant for heavy work.

... For Stacking and Storage of Boxes and Pans USE STACKRACKS



Patents Pending

Saves Space, Time, and Labor

Store boxes and pans in an orderly manner—one on top of the other. Each stored unit is easily and quickly accessible as the top one...each stored unit can be moved, changed or replaced without disturbing any other.

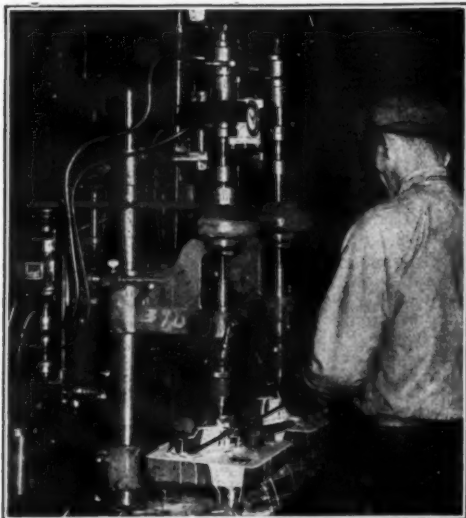
The STACKRACK is ideal for use on assembly floor, in machine shop, under work bench, and for stockroom control. In fact, STACKRACKS can be used to advantage wherever you have a storage and stacking problem. STACKRACKS are made in single units. They are constructed of angle and formed steel parts, welded together. Each rack automatically locks securely in position on the rack underneath.

**STACKBIN
CORP.**



PROVIDENCE, R. I.

750 Holes Per Hour ... 22 Hours Per Day



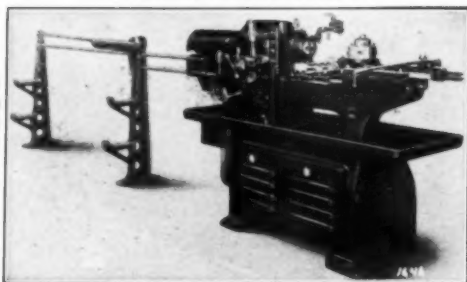
ATLAS Drill Presses are doing real production work for the U. S. Pressed Steel Products Company, working 22 hours a day, with the spindle running at 5200 R. P. M. Week in and week out, these Drills are run at this high speed practically constantly, doing an automotive parts job. What could be a stiffer test for stamina in a Drill Press? Yet ATLAS Drill Presses are standing up under this and many other similar jobs and maintaining their accuracy. They will do the same in your plant. The cost is surprisingly low for such quality. Prices range from \$13.95 to \$37.95. Made in four sizes. Bench and floor models. See them at your jobber's, or write direct for descriptive catalog of these and other ATLAS Tools.

ATLAS PRESS COMPANY

1850 N. Pitcher St., Kalamazoo, Mich.

Complete display at ATLAS SALES CO., 35 E. Wacker Drive, Chicago

THE NEW FOSTER NO. 1.



The New Foster No. 1, as shown in the illustration, is a new development of the Foster Machine Company, Elkhart, Ind., to meet the present day demands for high spindle speeds. It has a regular automatic chuck capacity of $1\frac{3}{8}$ " and may be increased to $1\frac{1}{2}$ ".

A four-speed motor is mounted in the cabinet base and drives a two-speed transmission which is also located in the cabinet base. The drive from transmission to spindle is by means of vee belt. There are eight spindle speeds ranging from 300 to 3600, which are dial selected, or different spindle speed ranges may be furnished if desired.

Spindle is mounted in precision ball bearings, and is also equipped with a brake for quick stopping.

Machine is arranged with hand-operated automatic chuck and bar feed, or with cam-operated automatic chuck and bar feed, as desired. With the cam-operated automatic chuck and bar feed the opening and closing of collets and feeding of bar is done mechanically, and all that is required of the operator is to engage a clutch by means of small lever on front of machine, and the bar is unclamped, fed forward against stop and reclamped automatically in approximately one second. The bar is supported inside of a tube and is fed into the machine by means of feed fingers which feed the bar up to the end of collet. When bar is used up and new bar is reloaded, the bar support tube is swung forward so that new bar may be loaded from operator's end of rack.

Machine is equipped with lever-operated cross slide, or a combination screw and lever-operated type cross slide may be furnished. The turret is automatically unclamped,

(Continued on Page 18)

THE NEW SUPER HIGH SPEED — SENSITIVE

Ettco-Emrick

FRICTION
CLUTCH

TAPPING ATTACHMENT



A large concern cut its piece rate from 39c. to 13c. per M with this tapper at 2000 R.P.M.

Another gained 10% in comparison with another tapper—both running at the same speed . . . Less fatigue.

The life of the tool is beyond reasonable expectation. Examining a few, after six months use—all day long—at 1800 R.P.M. in steel, we found the parts simply looked polished.

THEY RUN IN OIL

Oil is actually pumped to all the parts and bearings.

Then the **HELICAL GEARS, BALL BEARING SPINDLES** and **CARBONIZED ASBESTOS-BAKELITE CLUTCH** all running in oil is a revelation in quietness, smoothness and **LACK OF VIBRATION.**

The whole design of the tapper is a real job—clean—right.

TRY ONE

Send it back if you don't want it now. But get set.

No. 100— $\frac{3}{16}$ " Cap. limit. For delicate fast small tapping.
No. 200— $\frac{1}{4}$ " in steel. For general all-around use.

Write for Descriptive Bulletin

ETTCO TOOL CO., Inc.

594 Johnson Ave.,

Brooklyn, N. Y.

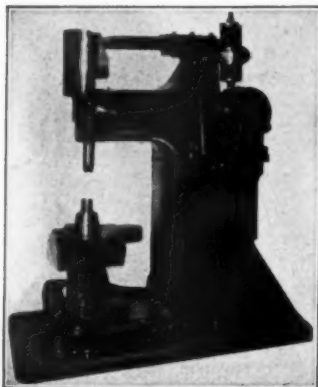
indexed and reclamped by the backward and forward movement of the turret slide. Bed is equipped with adjusting block for quick leveling.

This new development offers speed of operation, accuracy and rigidity unattainable in the older design machines.

The Foster Machine Company will exhibit this new machine in Booth No. 200 at the Cleveland Show, together with their new No. 1½ Motor-in-Base Machine, designed to take full advantage of the new cutting alloys; their new No. 3-F Indexing Turret Type Fastermatic, and their new No. 7 ram type Universal Turret Lathe with 2½" bar capacity.

Booth No. 200 will be in charge of H. A. Moore, General Sales Manager. Others in attendance will be W. H. Foster, President; L. D. Tyson, Chief Engineer; W. P. Tripp, and C. Niblock.

NO. 7B HIGH SPEED RIVETING HAMMER



To meet the demands of an ever increasing field in heavy cold riveting, The High Speed Hammer Company, Inc., 305-321 Norton St., Rochester, N. Y., have just brought out their new No. 7B HIGH SPEED Riveting Hammer.

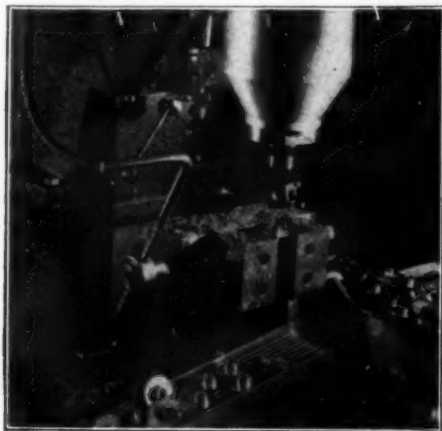
This new unit will successfully cold head 1½" diameter mild steel rivets, forming oval heads in 30 seconds each; and ¾" diameter rivets in 7 seconds each. In the case of riveting

flanges, a much greater diameter can be handled. These Hammers are also capable of performing many operations of swaging and forming.

The No. 7B HIGH SPEED Riveting Hammer is of heavy rugged construction, and carried all patented new and improved features both front and rear. This Hammer weighs approximately 5000 lbs.

(Continued on Page 20)

BIG REDUCTION IN FUTURE TOOLING COSTS



These jigs are made in 6", 8" and 14" sizes.

The
"Johns" Universal Drill Jig
On The
"Haskins" Tapping Machine

Illustrates the Production Possibilities for
Drilling or Tapping when using these jigs.

Write For Our Literature

HEUSER MANUFACTURING CO.

1638 N. Paulina St.,

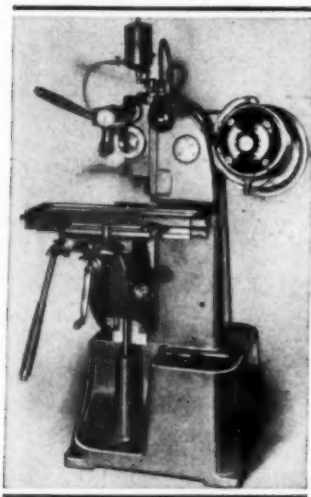
Chicago, Illinois

Engineers, designers and production men are invited to consult with them in the fabrication of parts in which specially large rivets or studs are employed, obtaining the benefit of experience gained through twenty-three years in the field of cold riveting.

This new unit will also permit the substitution of rivets and studs in assemblies where previously screws and bolts were used.

General specifications are: Capacity, $\frac{3}{4}$ " to $1\frac{1}{2}$ " diameter, depending on material, size and shape of head; Horizontal gap, $15\frac{1}{2}$ "; Floor space, 28" wide x 64" long; Height over all, 74"; Net weight of Hammer, 5000 lbs.

THE NEW "WHITNEY" HAND MILLING MACHINE



The new 1935 "Whitney" Hand Milling Machine, manufactured by W. H. Nichols, Waltham, Mass., is designed to take care of small part milling in any shop, regardless of lot size. In the tool room especially, where ease and quickness of set-up is indispensable, the "Whitney" has a great advantage over heavier machines, due to its time-saving abilities.

Its longitudinal feed is 10", transverse feed 7", vertical feed of knee $13\frac{1}{2}$ ", and the vertical movement of head $4\frac{1}{2}$ ". Table can be brought up to center line of spindle. Has micrometer dials on transverse and vertical feeds; hand set stop for vertical movement of head. The table has a working surface of $4\frac{1}{4}$ " x 21", with a standard $\frac{5}{8}$ " T-slot in center and illuminated by adjustable reflector lamp.

(Continued on Page 22)

KRW Hydraulic and Sensitive ARBOR PRESSES

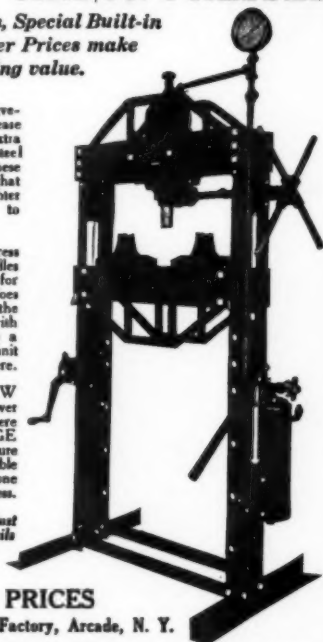
New Improvements, Special Built-in Features and Lower Prices make them an outstanding value.

THE last word in convenience, efficiency and ease of operation. Built extra strong and well braced, with steel trusses electrically welded, these presses will withstand strains that would cause presses of lighter and inferior construction to buckle or collapse.

Hand wheel for sensitive press operations has sliding handles which pull out to the ends for increased leverage. Work does not have to be changed from the work table as is the case with other make presses having a separate sensitive press unit mounted on the side or elsewhere.

The importance of this KRW feature as a time and labor saver can be appreciated. Also there is **NO EXTRA CHARGE** for this important built-in feature on a KRW Press. Work table can be raised easily with one hand. A strictly one-man Press.

Write for special circular, just off the press, giving full details and specifications of all KRW Arbor Presses.



PRICES

F. O. B. Factory, Arcade, N. Y.

- | | |
|---|----------|
| No. 37—35 ton Hydraulic and Sensitive Arbor Press (hand operated) | \$128.00 |
| No. 37B—35 ton Hydraulic and Sensitive Arbor Press (air-oil operated) | 128.00 |
| No. 37E—50 ton Hydraulic and Sensitive Arbor Press (hand operated) | 150.00 |
| (Can also be furnished in air-oil operated at same price) | |
| No. 37F—70 ton Hydraulic and Sensitive Arbor Press (hand oper. only) | 275.00 |
| Gauge and fittings, \$15.00 extra on all presses. | |

K. R. WILSON

10-16 Lock Street, Buffalo, N. Y., U. S. A.

EXPORT DEPARTMENT

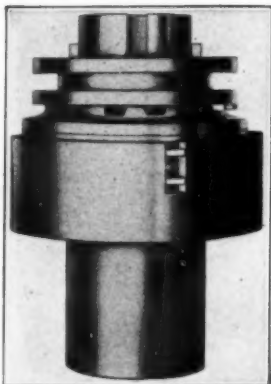
90 West St., New York, N. Y.

WEST COAST BRANCH

722 Mateo St., Los Angeles

The spindle is made of heat-treated steel and is carried on Timken Precision Taper Bearings. Spindle nose has the new milling machine standard taper of $3\frac{1}{2}''$ to the foot, allowing tool to be easily removed by hand by loosening two set screws. Four spindle speeds of 100, 200, 650 and 1200 R.P.M. are obtained by means of interchangeable double ratio sheaves. Driven by constant speed master-gear-head motor of $\frac{3}{4}$ h.p., which can be furnished for all usual voltages in either a.c. or d.c. For light-socket operation a $\frac{1}{2}$ h.p. single phase unit is available. Drive to spindle is through a double V-belt which is not only adjustable for tension, but is also maintained in constant tension, regardless of position of head.

A NEW CONWAY LINE OF SMALL CLUTCHES



The Conway Clutch Company, 1541 Queen City Avenue, Cincinnati, Ohio, announces a line of small Clutches in three sizes with $5\frac{3}{8}''$, $4\frac{1}{2}''$ and $3\frac{1}{2}''$ outside diameters in single plate for fractional horse powers, and multiple plate for heavier drives.

They can be operated singly or doubly, or for forward and reverse drive, either dry or in oil. They follow a design similar to the larger sized Conway Disc Clutches, except that the angle of actuation has been adapted to conserve frictional area, and give strength to the carrier.

They have hand adjustment, and are proofed against centrifugal force. A set screw or a set screw and key are the only means necessary for attaching to shaft. All the most modern materials are used in their construction.

The cut above shows the Tandem Plate Clutch with adapter cup on which can be mounted a gear or other means of power transmission. Shaft coupling types are also available.

Bulletin XYZ giving description, power data, dimensions and prices of this line of Clutches, is ready for mailing.

(Continued on Page 24)

FOOTBURT



A Single Spindle Footburt Sipp Sensitive Drill

**Made in three
sizes of single
and multiple
spindle models**

More holes with this machine

Why? Because you can change speeds in two seconds or belts in ten seconds—because the automatic idlers keep the belt pulling to capacity at all times—because the full ball bearing equipment and accurate machining gives a smooth, fast cut.

Write for No. 650 Folders

The Foote-Burt Company, Cleveland, O.

FOOTBURT

EISLER COMBINATION WELDER AND TRIMMER FOR FLEXIBLE SHAFTS, WIRE AND CABLE

Flexible shafts, stranded wire and cables composed of a multiplicity of small wires, either twisted together or helically coiled, have a tendency, upon being cut, to unravel at the ends, sometimes ruining a considerable length and making it difficult to join it to other pieces of cable or mechanical parts.



In coping with this condition, the Eisler Engineering Co. of 746 So. 13th St., Newark, N. J., have developed a combination cutting, welding and trimming machine upon which flexible cable may be cut apart or two pieces joined and trimmed without unraveling and at the same time maintain practically the same flexibility as it had before.

This combination welder and trimmer is designed to operate on either 110 or 220 volt alternating current and can be mounted on a bench or furnished with a movable pedestal permitting it to be readily moved from one position to another.

The machine is equipped with a special annealing device for annealing the welded stranded wire, a slide adjustment for closely regulating welding current, push button control of upset and current, foot-operated clamping jaws for holding the work, a lamp with reflector for adequate light upon the work and an especially designed grinder or trimmer for trimming the work.

A flexible shaft or cable to be cut apart is clamped in the welding jaws. Application of current welds the strands together and finally severs the cable. The ends of the cable are then placed in the trimmer, which is equipped with a carborundum wheel driven by one-twentieth horse power motor and finished off.

In welding two ends of cable together the ends are first prepared as above and then welded together, after which it is placed in the annealer. After proper annealing the

(Continued on Page 26)

ACTION *with* SAFETY

Both are YOURS By Using
The New **LOWELL**
Safety-Steel **WRENCH**



WILL NOT BREAK

Successfully Resists
a Straight Pull of

MORE THAN A TON!

EXHAUSTIVE TESTS have proved that the new **LOWELL** Wrench will stand up under the combined straight pulling strength of ten husky men (2200 to 2400 lbs.) That's because the **LOWELL** is made of an electrically treated metal of unusual strength. In addition to this strength it has fully enclosed ratchet and parts, with absolute crushing action on hardened steel pawls. It is incomparable when a rugged wrench is required, especially in tight places or long runs and for heavy leverage. Use it on such jobs as pipe coupling, steel construction, timber bolting, culvert connecting, staybolt caps, cable clamps, grease plugs, countersink plugs, tunnel liner plates, wood tank and silo bands, railroad track bolting, water gates, etc., etc.

TRY A LOWELL

on the toughest job you can think of—and see how the **LOWELL** can "take it". And this you can depend on—a **LOWELL** may bend to warn you, **BUT IT WILL NOT BREAK.**

Write for Illustrated Circular T

LOWELL WRENCH CO.
WORCESTER, MASSACHUSETTS, U. S. A.

cable is inserted in an automatic centering device of the trimmer and burrs of the joint ground off.

The machine will handle either square or round solid rods, wire and bars as well as flexible shafts and cables of steel, nickel, brass, copper and other metals up to .250" in diameter.

NEW SHAW-BOX GRIP LIFTER

The Shaw-Box Crane & Hoist Co., Inc., Muskegon, Mich., has developed and patented the illustrated device for safely handling steel plates, columns, piling, and similar materials. This device is now on the market under the trade name "Grip Lifter".



The "Grip Lifter" has been thoroughly tested and was subjected to much abuse before being placed on the market. It has been ascertained that after a piece of material has been lifted with it, it is absolutely impossible to release the material until load has been placed on the ground and released from it by pulling on the trip rope.

One of the tests to which it was subjected was to grip a heavy column on its end and raise it in the air through the medium of a revolving locomotive crane. After the column had been raised, the crane was rotated until the column had assumed almost a horizontal position. The direction of rotation was then changed without landing the piece, and still the grip could not be broken until the column was again landed on the ground.

Bulletins are available and will gladly be forwarded by the manufacturers upon request.

(Continued on Page 28)

RACINE

Announces

A *New* HYDRAULIC SAW

Pioneers in the application of Hydraulics
to Power Hack Saws.

See the complete line at Booth No. 106

RACINE TOOL & MACHINE CO., RACINE, WIS., U. S. A.

Mall
TRADE MARK

FLEXIBLE SHAFT EQUIPMENT



GRINDERS
SANDERS
POLISHERS

*A Size For
EVERY Job!*

Model No. 3524-D $\frac{3}{4}$ h.p., 3450 r.p.m., electric grinder with 6 ft. flexible shaft, tilting-swiveling castor base with tool tray. Can be furnished with interchangeable angle or straight spindles for sanding, polishing, or grinding.

Also inquire about our low priced $\frac{1}{2}$ h. p. grinder.

Bulletins on request

MALL TOOL COMPANY, 7742 South Chicago Ave.,
CHICAGO, ILLINOIS

STACKBIN ALL STEEL BOX TRUCK

This new all-steel Box Truck is manufactured by the Stackbin Corporation, P. O. Box 940, Providence, R. I. It is designed to supply the need of a Box Truck which is perfectly smooth on the inside, with no rivets, bolts, slivers, etc., to catch or tear the goods at any time, yet give many years of satisfactory service without the necessary repairs needed constantly in wooden equipment.



The size of the standard Box Truck is 33" wide x 19" long x 23" deep, inside dimensions, and is constructed of 20 gauge sheet steel sides and ends. A rolled upper edge with special rounded corner castings, further reinforced with a channel steel bar entirely around the truck under the rolled top, makes a very rigid truck. The bottom is

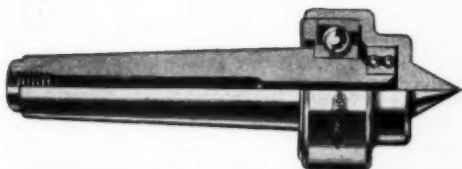
made of 18 gauge sheet steel, formed and securely welded into the bottom of the truck. The chassis frame is made of heavy gauge formed steel channel, securely welded together, on which are mounted the casters, two 3" swivel and two 4" stationary. The chassis is securely bolted into the underneath of the truck, thus eliminating rivets and bolts on the inside of the truck. Finished battleship gray baked on synthetic enamel.

The Stackbin Corporation will make to order any size of Box Truck required of the same construction and finish as above, equipped with suitable size casters.

IMPROVED MILLHOLLAND INDEXING DRILLING MACHINE

A heavier pattern No. 5 Automatic Indexing Drilling Machine with wider range of capacity in feeds and speeds and employing a number of new features has been developed by the Millholland Sales & Machine Company, 936 East Georgia Street, Indianapolis, Indiana. Speed with which index table will operate has been stepped up to 720 indexes per hour.

(Continued on Page 30)



STURDIMATIC LIVE CENTERS *for LATHES, GRINDERS and* **MILLING MACHINES**

It turns with the work.
Eliminates friction of dead center.
Lowest possible overhang prevents
vibration and chatter.

Write for Catalog and Free Trial Offer

STURDIMATIC TOOL COMPANY
5218 Third Street, DETROIT, MICH.

Try it at our risk!

A Norgren Sight Feed Automatic
Air Line Lubricator feeds oil to the
tool with the air that drives it.
Constant, automatic lubrication.
Adjustable from zero to complete
saturation of air stream. Shipped
on trial to any rated concern.

*Write for specifications
and prices.*



**Oiled
Air**

is better than
a poor mem-
ory for Air
Tools!

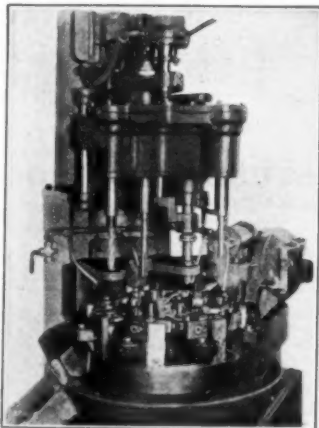
C. A. NORGREN CO., (Inc.)
2012 Market Street, Denver, Colo.

4, 6, 8, 10, or 12 or more spindles can be included in the vertical drilling unit. Machine employs up to $7\frac{1}{2}$ h.p. motor on vertical unit and up to 3 h.p. motors on each of two horizontal units, which can be equipped with multiple spindle drill heads as required.

The base is made in several patterns according to whether or not horizontal units are required.

The machine is sensitive enough to drill $\frac{1}{8}$ " holes in steel and has power enough to handle $\frac{7}{8}$ " to 1" drills in steel, $2\frac{1}{2}$ " boring cuts and facing up to 3" in diameter.

Whole mechanism is synchronized throughout by using a Standard No. 5 Millholland Automatic Drilling Unit in vertical position as a "Master Unit" for all feeds, both vertical and horizontal, and for automatic indexing. In this case motors on horizontal units drive tool spindles only.

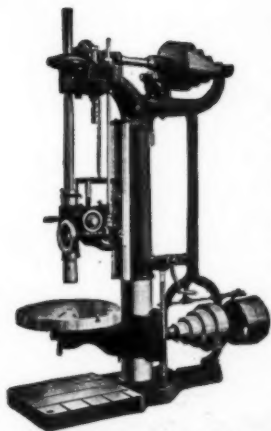


A new feature of the machine is an underneath burring attachment for holes drilled through the work in vertical position.

An 18" diameter table is regularly employed in the machine, and many compact designs of holding fixtures are available to permit multiple operations on a wide variety of parts.

Overall efficiency of machine has been increased so that in most cases, in a complete cycle from one index to another, 70% of time is actually used in cutting metal; the remaining 30% being employed in rapid approach and return of tools and indexing the table automatically. The table indexes continually, but there are always sufficient open stations to permit operator to load and unload machine easily.

(Continued on Page 32)



DRILLING MACHINES

SIZES

Stationary Head—14'-10'-11'

Sliding Head—14'-15'-31'-34'

These machines were formerly manufactured by the Rockford Machine Tool Company of Rockford, Illinois. Thousands of these machines have been installed and are giving universal satisfaction.

Also manufacturers of the Cleereman Automatically Oiled, Anti-Friction High Speed Drilling, Boring and Tapping Machines.

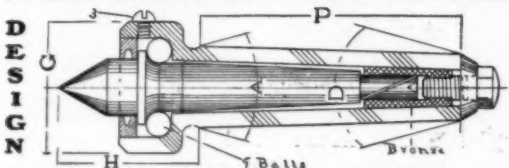
Builders of drilling equipment for over twenty years.

CLEEREMAN MACHINE TOOL COMPANY

Green Bay, Wisconsin

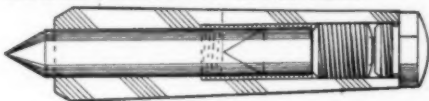
[Formerly Green Bay Barker Machine & Tool Works]

RIGID RESILIENT LIVE CENTER



RIGID INSERT CENTER

2 1/2
to
1



IT OFFERS:

Long Life & Short Overhang

Short Life & Long Overhang

Initial Cost, no greater; Replacements Cost less than half.

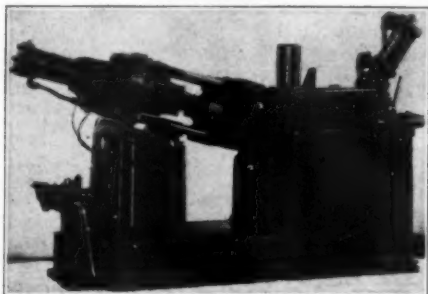
Rigid Tool Holder Co., 2010 Witherell St. Detroit, Michigan

An overload safety clutch is provided which prevents damage to machine through tools breaking off or sticking in work. Overload clutch throws out feed to entire feeding and indexing mechanism, and sets up a loud clicking sound when any interference to indexing or tool feeding is present. This, however, does not throw machine out of time.

Chip removal is accomplished by paddle wheels on index table, which continuously push chips into a chute where they are carried by gravity through a downspout into a strainer basket set in coolant sump box. Separate motor driven pump for coolant is provided.

By substitution of multiple heads and fixtures and change of gears and cams, the machine can be readily changed over for different parts.

REED-PRENTICE FULL HYDRAULIC DIE CASTING MACHINES



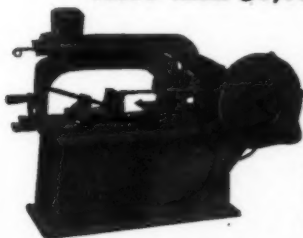
Reed-Prentice Corp., Worcester, Mass., have manufactured and in use throughout the world over two hundred die casting machines for producing aluminum, zinc and brass castings. Castings are produced efficiently and economically, and the machine maintenance on die casting equipment has been materially reduced on account of the rigid construction.

Machine is hydraulically operated throughout with one standard Vickers oil pump and the control valves for the die cylinder as well as the plunger cylinder are standard Vickers product. The operating links are made of cast steel bushed with hardened bearings and pins with facilities for lubricating.

(Continued on Page 34)

They Stand the Service Test!
ROBERTSON'S ECONOMY
High Speed Power HACK SAWS

More than 30,000 In Use



MANUFACTURERS, large and small, use Robertson's **ECONOMY** Hack Saws to reduce their manufacturing and tool room costs. Sturdily built, of the very best of materials, the **ECONOMY** gives them speed, accuracy and durability. One feature alone—The Oil Lift—quickly pays for the saw's installation by savings in blade costs, for blades give triple service through this method.

Write Your Dealer or Us for Complete Information

W. Robertson Machine & Foundry Co.
 57 Rano St., **Buffalo, N. Y.**

For
DRILL
PRESS

VICE

Often Used
 on **MILLER,**
SHAPER or
PLANER

With and Without Jig Attachments

Made In Three Sizes,—Jaws 6', 9' and 12' Long



Bushings inter-
 changeable. Any
 Size Up To 1 1/16"

Saves
Jig Making

Good as a
Plain Vise

Understand
And Buy It

10,000 Sold,
for a Reason

Fig. 1. With Jig Attachments.

Send for Circulars

THE GRAHAM MFG. CO., 70 Willard Ave.,
PROVIDENCE, R. I.

Machine is arranged so that it can be operated either manually or automatically. For manual operation lever No. 1 closes the die cylinder—lever No. 2 controls the operation of the metal plunger cylinder. No. 1 and No. 2 levers are interlocked so that it is impossible to operate the plunger cylinder until the dies are securely closed.

For automatic operation it is only necessary for the operator to throw lever No. 3 to the right putting the machine automatically through the cycle. The first operation is closing of the die—second operation is the down movement of the metal plunger cylinder forcing the metal into the dies. It is impossible to operate the metal cylinder until the dies are securely closed. The third operation is the electric time delay relay allowing for dwell or solidifying period from 0-20 seconds, eliminating the necessity of the operator estimating the solidifying period.

At the end of the time the automatic timing circuit is set for, the machine automatically goes through the reverse cycle ready for the next operation.

When the dies are constructed for automatic ejection it is arranged when the dies open to automatically eject through holes in the center of the die plate. This allows for automatic removing of the casting from the dies having them drop into a box or chute at the bottom of the die. The die plates are planed on four sides allowing for application of core pulling attachments. The movable die plate is bronze bushed with oiling facilities.

ARMSTRONG ENTERS DETACHABLE SOCKET WRENCH FIELD

Armstrong Bros. Tool Co., Chicago, announces a complete line of Chrome-Vana-



dium Steel Sockets for detachable head socket wrenches. These new sockets come in all sizes and types from the tiny $\frac{3}{32}$ -inch miniatures for fine electrical work to the $2\frac{1}{2}$ inch extra heavy duty sockets. Included in this new line are both double-hex (12 point) and double square (S point) sockets, sockets for Miniature, Light, Standard, Heavy Duty and Extra Heavy Duty drivers.

These new Sockets are chrome-plated and come singly or in matched sets made up for all industrial, electrical and automotive uses. Sets come in fitted steel cases.

(Continued on Page 36)

SUPREME *Super-Duty* SHEAR BLADES

Poorly finished, inaccurate shear blades waste set-up time, cause needless changing and re-grinding and are short lived. For these reasons it will pay you to specify SUPREME Shear Blades as *precision* plays an important part in their manufacture.

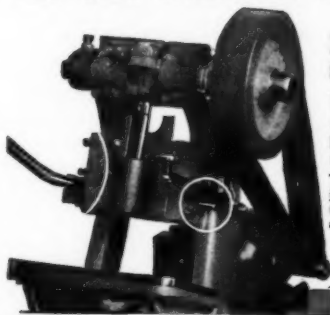
are made to order to suit your requirements—for any make of Shear. They are manufactured in Laid Alloy and High Speed Steel, as well as Solid Steel.

Let us quote you on your shear blade requirements.

Send Us Your Next Inquiry

The Saw & Knife Specialty Co., Inc.
6526 Carnegie Ave., Cleveland, Ohio

Fool-Proof Protection for All PUNCH PRESSES !



The ROUSSELLE Safety Device

It takes a mechanic about 15 minutes to install the Rousselle Safety Device—and to end your punch press worries.

There's no chance of injury with the Rousselle on the job—it's positive in action, simple in operation and absolutely fool-proof. Here's real low-cost accident insurance!

Write for Details and Low Price

DAVID J. ROSS CO., P. O. Box 656
Benton Harbor, Mich.
Territories Open for Progressive Dealers

NEW AUTOMATIC SELF-CENTERING REEL STAND

The Wittek Manufacturing Co., Chicago, announce a new and improved Automatic Self Centering Reel for holding coil stock. This reel stand is equipped with four automatically expanding coil holders which slide up or down on the radial arms by means of auxiliary threaded shafts, which shafts are rotated by gears, simply by rotating the reel to the right or left with the gears in mesh. When adjusted to the desired diameter the gears are disengaged and locked into position by shifting the control lever on the gear box. The gears are enclosed in a dust proof housing, packed with grease, requiring no further attention.

The radial arms and threaded shaft are guarded by a hardened rail and supported at their ends with a heavy retaining ring, which also serves to keep the stock from looping over the arms when the reel is inclined.

The four coil holders are always equal distance from the center, therefore the coil is always centered, assuring a perfectly balanced reel which uncoils free and easy.

This is a heavy duty precision-built reel which adjusts to any angle, from horizontal, and will hold coils up to 500 lbs. in weight, from 9" to 28" open centers.

The reel is supported on a heavy base and is adjustable for height to meet the required condition.

(Continued on Page 38)



**Wittek Automatic,
Self-Centering Reel,
Pat. No. 1,885,613**

"ALNOR" Pyrometers

For every requirement

Inexpensive-accurate-durable

For over 15 years "Alnor" pyrometers have been the choice of thousands of both large and small shops everywhere. Because of their lower price and compact size they are extensively used for indicating temperatures of molten lead, babbitt, tin and die cast metals, heat treating furnaces, for flue gas temperatures, and similar service. Also other types of portable and wall pyrometers for every requirement.



\$13 to \$36 and up
depending on type
and application.

Write for Information.

Illinois Testing Laboratories, Inc.

150 W. Austin Ave.,

Chicago, Ill.

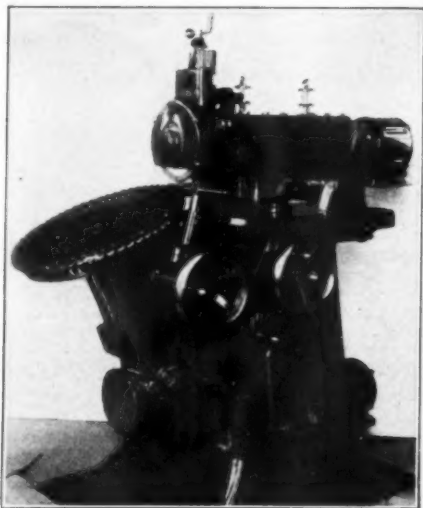
35 Year's Experience

BETTER-MADE DIE SETS	 <p>The logo is a hexagon with a thick border. Inside the hexagon, the word "BAUMBACH" is written in a large, bold, serif font. Below the word is a detailed illustration of a die set, showing a die and a punch. Below the illustration, the word "STANDARDIZED" is written in a smaller, bold, serif font. At the bottom of the hexagon, the words "DIE SETS" are written in a large, bold, serif font.</p>	AT LOWER COST
24 DIFFERENT STYLES		OVER 95,000 SIZES
Semi-Steel		Drop Forged Steel

Send For Our New 208 Page Catalog

E. A. BAUMBACH MFG. CO.
1810 South Kilbourn Ave., CHICAGO, ILLINOIS

OLIVER FULL AUTOMATIC FACE MILL GRINDER



The Oliver Instrument Co., Adrian, Mich., announce the new Oliver Full Automatic Face Mill Grinder which sharpens the teeth of a face mill entirely automatically.

The cutter is mounted on a work spindle which is mechanically indexed to bring each tooth under the grinding wheel where it is held in proper relation by means of a lip rest attached to a ram which carries and reciprocates the wheel. No index plates are used, the adjustment for various numbers of teeth being made in the index mechanism.

The form of tooth is governed by a hardened cam which may be varied to suit the special use for which the cutter is intended.

In grinding a cutter having tungsten carbide inserts, it is not necessary to back off the carbon steel blade as the wheel cannot load due to the fact that at each reciprocation the wheel passes over a diamond dresser which

(Continued on Page 40)

Sheldon Arbor Presses



Sheldon Milling Machine
Vises.

Sheldon Drill Press and
Shaper Visers.

Sheldon 90° Angle Plates.

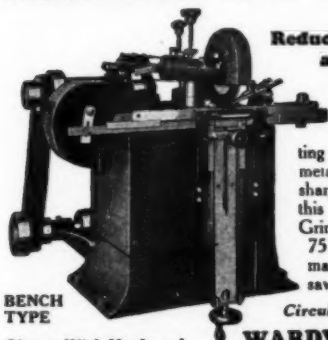
*Write for illustrated
price list.*

Sheldon Machine Company
3255 Cottage Grove Ave., Chicago, Ill.

WARDWELL MODEL E-C COMBINATION **Automatic Saw Sharpener**

will

**Reduce Saw Purchases
and Increase Your
Cutting Speeds**



**BENCH
TYPE**

*Shown With Hack and
Band Saw Attachments*

Power hack saws,
metal and wood cut-
ting band saws, all types of
metal cutting circular saws,
sharpened automatically in
this improved Wardwell
Grinder, at a speed of 30 to
75 teeth per minute. The
machine accurately sharpens
saws as fine as 32 teeth to 1".

Circular Free Upon Request

WARDWELL MFG. CO.
3165 Fulton Rd.: Cleveland, O.

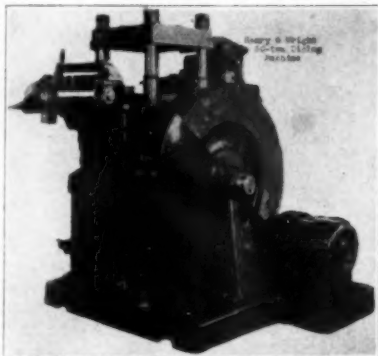
keeps it properly formed and sharp, the dressing of the wheel is also mechanically controlled.

Two speeds are provided, 15 strokes per minute for roughing and $7\frac{1}{2}$ strokes per minute for finishing.

You can see this machine in operation at Booth 208 at the Cleveland Show.

HENRY & WRIGHT TO EXHIBIT LATEST MODELS

Among the machines to be exhibited at the Cleveland Show by Henry & Wright, of Hartford, Conn., is the 50 ton, automatic type, dieing machine illustrated here. This machine is an automatic high speed power press, equipped



with automatic double roll feed arranged with direct connected motor drive and equipped with heavy duty adjustable scrap cutter.

The machine embodies many recent improvements and differs decidedly from earlier models. It produces intricate stamped metal parts complete at each stroke of the machine while operating at high speed, combining in one machine operations which usually require several conventional type presses.

This dieing machine has a capacity of 50 tons, roll feeds handling material up to 12" in width, maximum feed pitch being $8\frac{3}{8}$ ". The scrap cutter, which is of recently improved design, automatically cuts materials into lengths equal to feed pitch. The machine will be shown tooled and in actual operation.

Other Henry & Wright products which will be in view include their Automatic Feed High Speed Steel Press, and their Automatic Motor Driven Cradle Type Stock

(Continued on Page 42)

Cut Your Finishing Costs By Using
Genesee ^{Adjust-able} **Hollow Mills**
Accurate • Long • Lived • Easily Adjusted

Made in 7 Styles



Concerns—the country over—are using GENESEE Production Tools to cut their costs. Let us show you how. Send us a sample of your work—or blue prints will do—and we will submit estimates that should show remarkable savings. Mail today—and ask for a copy of our free catalog.

GENESEE MFG. CO. Inc., 141 N. Water St.,
 ROCHESTER, N. Y.

Angle Steel Stool Company
 Plainwell, Michigan

Manufacturers of Standard Office and Factory Steel Equipment

Special Equipment built to your specifications

**A Complete Line of Steel Work Benches,
 Bench Legs and Bench Drawers**

Are you planning on additional work bench space? If so, write us for information on our complete line of Steel Bench Legs and Bench Drawers. They are all ready for you to attach the plank tops and shelves for good sturdy benches. We have many sizes and patterns.



No. 9-26 Bench Leg

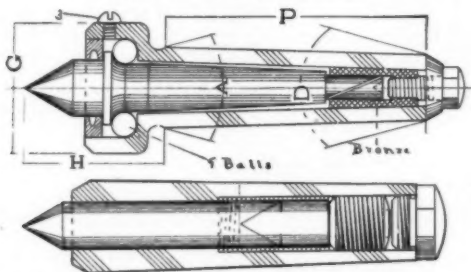
Represented in Chicago by:

Angle Steel Equipment Company
 9 South Clinton Street, Phone Randolph 1570

Reel. You will also be able to see an extensive collection of various types of stamped parts produced upon Henry & Wright automatic equipment, together with scrap strips showing die progressions involved in producing such parts complete at each stroke of press.

Don't fail to visit Booth No. E-308 and meet Mr. F. K. Simmons, President, Mr. A. E. Caserta, Chief Engineer, Mr. E. W. Slocum, of Detroit, and Mr. C. H. Hamilton, of Chicago.

THE RIGID LIVE CENTER



Rigid Live Centers, illustrated herewith, are manufactured by the Rigid Tool Holder Co., 2000 Witherell St., Detroit, Mich. Each Live Center consists of only three essential parts, the sleeve, insert and supporting screw. The sleeve is threaded internally at the rear end, hardened all over and ground accurately, both internally and externally. The object of this combination is to fill the sleeve with a very hard, wear-resisting, special high speed insert, and to feed it out as the point is worn and ground away. This avoids the disadvantages of a long overhang and gives a much longer life to this tool. Inserts are pressed in from the rear end only and require a pressure measured by tons.

If you will look at the illustrations you will note there are no foreign races, cages, pads, cushions or springs, yet the center has a resiliency similar to the bottom of an oil can. The Mac-It Ejector Screw at the rear end performs five functions. It allows a friction-bound retainer in the front end and only .002" clearance in the port hole instead of .008", guaranteeing corresponding accuracy in operation. It makes a much better center and reduces its cost.

SpeedWay

STEEL
BODY



Advanced Design STEEL BODIES

Lighter, stronger, handier—crash-proof. 11 other design advancements. Size for size more power, more holes, more drill, still priced 20% lower. Sizes and types for every use. Make it a rule to see the SpeedWay before you buy.

*More Drill
for the Money*

Standard equipment in leading industrial plants.

WRITE FOR
CATALOG

SpeedWay Manufacturing Co.
1822 So. 52nd Ave., Cicero, Ill.

A Heavy Duty VALLEY Ball Bearing BENCH GRINDER AT \$24.00

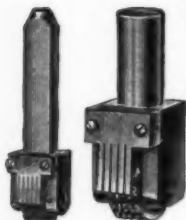


Full $\frac{1}{3}$ H. P. motor
3450 R. P. M. Over-
size Ball Bearings
mounted in dust tight
 housings. Repulsion-
Induction Single
Phase Motor (Not
Split Phase). Can be
attached to any light
socket. Fully guar-
anteed.

2-7" Dia. x $\frac{3}{4}$ " face wheels (Not the usual $\frac{1}{2}$ " face wheels).
Inclosed Guards, Adjustable for wear of wheel. Sub-
stantial Base with Cord and Plug and Switch in Base.

VALLEY ELECTRIC manufactures a Complete Line of Bench, Pedestal type
Buffers and Grinders. $\frac{1}{4}$ H. P. to $7\frac{1}{2}$ H. P.

VALLEY ELECTRIC CORPORATION ST. LOUIS, MISSOURI
Mfrs. of Ball Bearing Motors $\frac{1}{4}$ to 40 H. P.



Mark it—QUICKLY **with a Numberall Machine**

Stamp in perfect alignment. Made with 1 to 8 wheels. Shank for Hand or Press Stamping. Latest Hardening and Engraving Methods insure sharp figures and long service. We also make Steel Stamps, Trade Mark Stamps, etc. of superior quality.

Write for Circulars and Prices.

Numberall Stamp & Tool Co.
Huguenot Park, Staten Island, N. Y.

NEW L & W 10 1/4" DIVIDING HEAD

The L & W Chuck Co., 18 N. St. Clair St., Toledo, Ohio, announce that their new 10 1/2" Dividing Head is ready for distribution. This new head embodies many changes and is guaranteed for accuracy. A graduated spindle and index plunger provide quick indexing. Hardened bolts and nuts are used, lapped in worm and worm gear. A better adjustment for the worm eliminates the damage of back lash.

NEW EQUIPMENT TABLOIDS

**The manufacturers will be pleased to
send full information upon request**

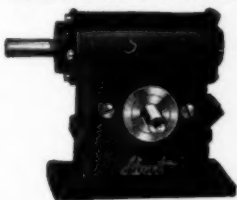
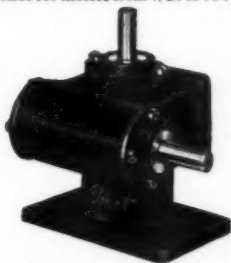
The Millholland Sales & Machine Co., Indianapolis, Ind., have just issued two new bulletins. One is entitled "New Millholland Turret Lathes" and the other "Millholland Turret Lathe Tools." Both are fully illustrated and may be obtained by writing to the manufacturer.

The R. G. Haskins Co., 4654 Fulton St., Chicago, Ill., have ready for distribution to users of tapping equipment a new "Per Cent of Thread Chart" that contains much interesting information.

Catalog No. 58 of the Grant Gear Works, 2nd & B Sts., Boston, Mass., covers their complete line of stock and special gears, sprockets and speed reducers. In addition to listing the various sizes and prices, the catalog contains data on spur and bevel gears that will be valuable to designers.

SPEED REDUCERS

Abart Speed Reducers are built to last—to give maximum efficiency and are outstanding for quietness and economy of operation. Made in sizes for motors from 1/20 to 98 H. P. Ratios from 4-5/6 to 1 to 100 to 1.



What are your requirements?
Write for Bulletin No. 800 on
Fractional H. P. Worm Units.

***Abart* GEAR AND MACHINE CO.** 4832 WEST 16TH ST. CHICAGO, ILLINOIS
Makers of Speed Reducers and Gears of All Kinds



Acme Standardized Drill Jig Bushings



Acme Drill Jig Bushings are a standardized product, carried in stock for prompt delivery in over 6,700 standard items. They are completely finished and ready for use. The Bushings are made by the most exacting scientific methods, which insures long wear, accurate fit and absolute satisfaction. Special sizes made to order.

Send for our Bulletin, which gives complete details, sizes available, and low prices.



ACME INDUSTRIAL CO.
419 N. Carpenter St., Chicago



New Equipment Tabloids—Continued

Many new materials handling methods are illustrated in the new Folder No. 311 issued by the Lewis-Shepard Co., Watertown, Mass. Fully illustrated, it shows how to efficiently move, stack or store practically every article manufactured, handled or warehoused.

The Foote Gear Works, Inc., 1301 So. Cicero Ave., Cicero, Ill., have published a new gear and speed reducer book which contains invaluable engineering data relative to speed reducers and gearing. They will gladly mail you a copy, if you are interested in such data, upon request.

The Binks Manufacturing Co., 3114 Carroll Ave., Chicago, Ill., announce their new catalog, listing and pricing with complete specifications, all the necessary equipment for industrial spray finishing. Of particular interest is a chart explaining the correct nozzle set-up to be used with different classes of materials such as oil paints, lacquer, synthetic enamels, etc., together with charts for correct air pressure and amount needed per minute. Ask for a copy on your letterhead.

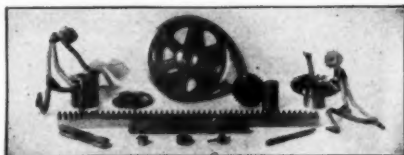
The Gwilliam Company, 360 Furman St., Brooklyn, N. Y., announce that their new catalog, No. 12, illustrating and describing their line of ball and roller bearings, is ready for distribution and that they will gladly mail copies to those interested upon request.

The Geometric Tool Company have issued three new booklets—No. 1 describes their new tool, DJ Solid Adjustable Die Head; No. 2, Class SJ Tap; No. 3, Styles KH2 and KHL Die Heads.

The Hutto Engineering Co., 515 Lycaste Ave., Detroit, Mich., is introducing a new honing and lapping machine for long bores. Bores from 1½ to 12" in diameter can be honed or lapped on this horizontal style, hydraulically reciprocated machine.

A No. 26 milling machine is announced by the Kent-Owens Machine Co., Toledo, Ohio. This machine has a cam-controlled table feed which permits any desired cycle of automatic table movements to be obtained. It is especially designed for high-production jobs and long runs requiring economical operation.

SMALL GEARS



ALSO
MEDIUM SIZES IN ALL TYPES
AND MATERIALS

Massachusetts Gear & Tool Co.
36 Nashua St. Woburn Mass.

DEALERS WANTED—We have available unassigned territories for the sale and distribution of

EISLER SPOT WELDERS

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Chicago and Milwaukee.

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Detroit, Michigan.

Northern Machinery & Supply Co.,
Minneapolis, Minnesota.

DEALERS INTERESTED in handling our welders are invited to consult Chas. Eisler at Hotel Cleveland, Cleveland, September 10-15 inclusive, during the National Machine Tool Exposition, or write to—

EISLER ENGINEERING CO.
746 So. 13th St., NEWARK, N. J.

New Equipment Tabloids—Continued

The New Britain-Gridley Machine Co., New Britain, Conn., are bringing out a new line of bar type automatic screw machines. The chief feature of these new machines is that they will stop automatically whenever the stock in any spindle is too short to permit machining of a complete piece of work. This guards against tool breakage and assures maximum daily production by avoiding the idle running of any spindle.

The Hannifin Manufacturing Co., 621 So. Kolmar Ave., Chicago, Ill., have designed a 35 ton hydraulic press to use for the accurate straightening of automobile axle shafts, crankshafts and other similar work. Simplified handling of straightening operations and increased production are claimed as a result of the control mechanism, which consists of a single lever that controls the entire operation of the ram.

A new high speed automatic press has been added to the line manufactured by the E. W. Bliss Co., 1420 Hastings St., Toledo, Ohio. It is a non-g geared model, operating at speeds up to 300 strokes a minute, and in a longer-stroke geared model it can be operated up to 175 strokes a minute. This latter model is designed for performing drawing operations of considerable depth.

The Toledo Machine & Tool Co., Toledo, Ohio, announce they are streamlining their line of punch presses. Corners and dust pockets are being eliminated and the lines of the machines smoothed out wherever possible. While this naturally will improve the appearance of their machines there is a practical idea behind it also, as the strength of the machine is being increased by distributing the metal in the most desirable manner.

A new, hand-operated miller, designed to bend bars and tubing up to 2" outside diameter, is being placed on the market by Williams, White & Co., of Moline, Ill. Tubes and bars can be bent to a maximum radius of 8".

Vickers, Inc., 1398-2 Oakman Blvd., Detroit, Mich., announce a new variable speed transmission unit, hydraulically operated. Any speed between 5 and 750 r.p.m. can be obtained by turning a handwheel on the side of unit.

New **WITTEK** High-Speed ROLL FEED for **SMALL PUNCH PRESSES**

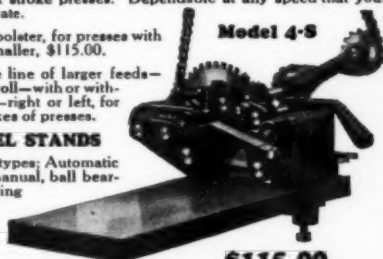
POSITIVE ACTION, feeds accurately lengths from 0" to 12" *per stroke*. Handles coiled material from wire to 4-inch widths. Universal for long or short stroke presses. Dependable at any speed that your presses will operate.

Complete with bolster, for presses with 7"x12" bed or smaller, \$115.00.

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Are made in five types; Automatic self-centering, manual, ball bearing and disk type. All adjust to any angle and for height.



Model 4-S

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The actual cutting is done by the cutter and its performance and the production of the machine tool are governed by the Tool Holder. Today's **ARMSTRONG TOOL HOLDERS** are capable of far greater speeds than are generally used. Use **Modern ARMSTRONG TOOL HOLDERS** for every operation on lathes, planers and shapers and the new line of special tools for Turret Lathes and Screw Machines.



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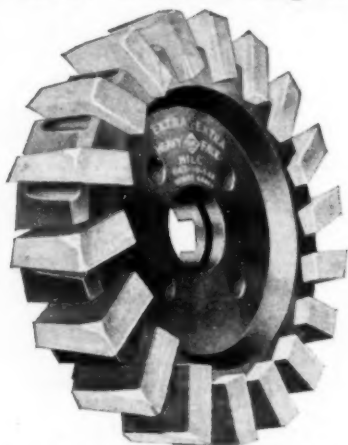


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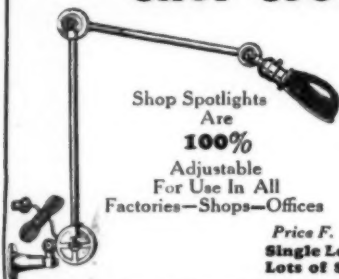
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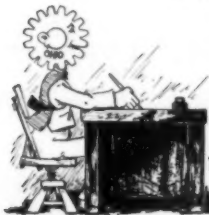
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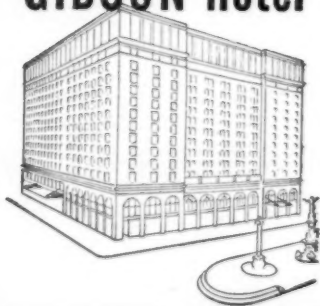
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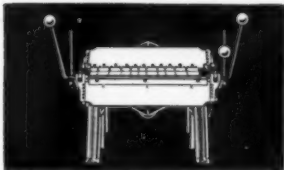


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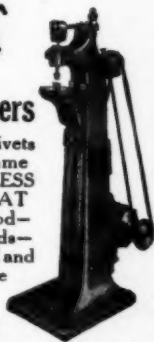


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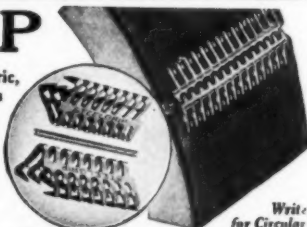
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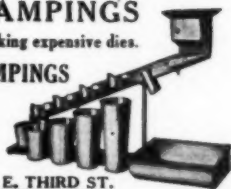
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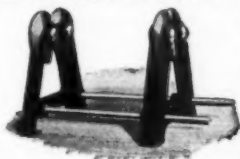
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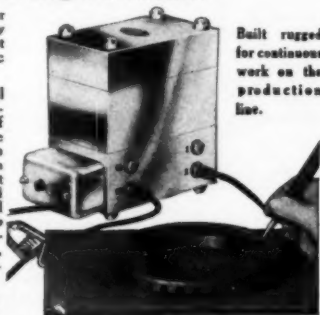
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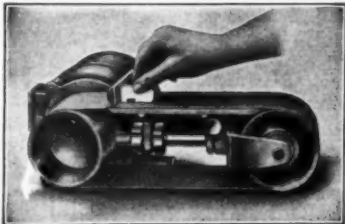
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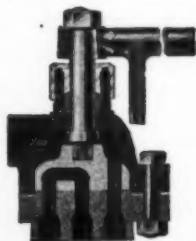
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Standard Engineering Works, Pawtucket,
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Sundstrand Machine Tool Co., Rockford, Ill.

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Band Saw Machines, for Metal

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Tannowitz Works, Grand Rapids, Mich.

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Buffalo Forge Company, Buffalo, N. Y.

Bearing Machines

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Skilaw Inc., 3317 Elston Ave., Chicago

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Anglo Steel Steel Co., Plainwell, Mich.

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Sheldon Machine Co., 3255 Cottage Grove
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Stackbin Corp., Providence, R. I.

Blowers

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Mass.

Centering Machines

Sundstrand Machine Tool Co., Rockford, Ill.
Cullman Wheel Co., 1359 Altgeld St., Chgo.

Centers, Lathe

Rigid Tool Holder Co., Detroit, Mich.

Chains, Silent and Roller

Cullman Wheel Co., 1359 Altgeld St., Chgo.

Chamfering Machines, Automatic

Grant Mfg. & Mch. Co., Bridgeport, Conn.

Chucks

Heuser Mfg. Co., 1688 No. Paulina St.,
Chicago, Ill.

Chucks, Automatic

Procurer Safety Chuck Co., 14 S. Clinton
St., Chicago

Chucks, Collet

Procurer Safety Chuck Co., 14 S. Clinton
St., Chicago

Chucks, Drill and Tap

Ettes Tool Co., Inc., 894 Johnston Avenue
Brooklyn, N. Y.
Hartford Special Mch. Co., Hartford, Conn.
Procurer Safety Chuck Co., 14 S. Clinton
St., Chicago
Sampson Tool Co., Inc., 101 Walker St.,
New York, N. Y.

Chucks, Lathe

Sampson Tool Co., Inc., 101 Walker St.,
New York, N. Y.

Chucks, Quick Change

Procurer Safety Chuck Co., 14 S. Clinton
St., Chicago

Chucks, Ring Wheel Grinder

Graham Manufacturing Co., Providence, R. I.

Cold Saws

Burke Machine Tool Co., Connecticut, Ohio

Collets for all Lathes and Millers

Hardinge Brothers, Inc., Elmira, N. Y.

Contract Work Wanted

Burke Machine Tool Co., Connecticut, O.

Couplings, Compression Shaft

W. H. Nicholson & Co., Wilkes Barre, Pa.

Classified Finding Index

Couplings, Flexible

W. H. Nicholson & Co., Wilkes-Barre, Pa.

Couplings, Shaft

W. H. Nicholson & Co., Wilkes-Barre, Pa.

Cut-off Saws

Tannowitz Works, Grand Rapids, Mich.

Cutters

Progressive Tool & Cutter Co., Ferndale, Mich.

Demagnetizers

Luma Electric Equipment Co., Toledo, Ohio

Desks

Angle Steel Stool Co., Plainwell, Mich.

Diamonds, Industrial & Rough

Mendes Cutting Factorias, Inc., 505 Fifth Ave., New York City

Diamond Pointed Tools

Mendes Cutting Factorias, Inc., 505 Fifth Ave., New York City

Discs, Blank and Forming

American Tool Works, Inc., Hartford, Conn.
Hamilton Tool Company, Hamilton, Ohio

Die Sets

Baumbach Mfg. Co., E. A., 1812 So. Kildeboune Ave., Chicago

Die Sinking and Engraving Machines

Pratt & Whitney Co., Hartford, Conn.

Dividing Heads

Wm. Carroll & Son, Norwood, Cincinnati, O.

Dowel Pins, Steel

Acme Industrial Co., 419 N. Carpenter St., Chicago, Ill.

Baumbach Mfg. Co., E. A., 1812 So. Kildeboune Ave., Chicago

Drills, Electric

Shilaw, Inc., 3304 Elston Ave., Chicago
SpeedWay Mfg. Co., 1322 So. 62nd Ave., Cicero, Ill.

Drill Jigs, Special

Hewer Mfg. Co., 1838 No. Paulina St., Chicago, Ill.

Drill Jigs, Universal

Hewer Mfg. Co., 1838 No. Paulina St., Chicago, Ill.

Drilling Attachments, High Speed

Graham Manufacturing Co., Providence, R. I.

Drilling Machines, Bench

Atlas Press Co., Kalamazoo, Mich.
Buffalo Forge Company, Buffalo, N. Y.
Cleesman Mchs. Tool Co., Green Bay, Wis.

Drilling Machines, Multiple Spindle

Foots-Burt Co., Cleveland, O.

Drilling Machines, Portable Electric

Shilaw, Inc., 3317 Elston Ave., Chicago
SpeedWay Mfg. Co., 1322 So. 62nd Ave., Cicero, Ill.
Strand Co., N. A., 8001 N. Lincoln St., Chicago
White Dental Mfg. Co., 135 W. 42nd St., New York, N. Y.

Drilling Machines, Sensitive

Atlas Press Co., Kalamazoo, Mich.
Buffalo Forge Company, Buffalo, N. Y.
Burke Machine Tool Co., Connecticut, Oh
Foots-Burt Co., Cleveland, O.

Drilling Machines, Vertical

Atlas Press Co., Kalamazoo, Mich.
Buffalo Forge Company, Buffalo, N. Y.
Foots-Burt Co., Cleveland, O.

Drives, Lathes

Culman Wheel Co., 1360 Altgeld St., Chgo.
Herdinger Brothers, Inc., Elmira, N. Y.

Electric Blowers

Clements Mfg. Co., 6650 Norwagansett Chicago

Electrical Instruments

Illinois Testing Laboratories, Inc., 160 W. Austin Ave., Chicago

Elevating Tables

Hamilton Tool Company, Hamilton, Ohio

Emery Wheel Dressers and Cutters

Western Tool & Mfg. Co., Springfield, O.

Emery Wheel Dressers, Diamond

Mendes Cutting Factorias, Inc., 505 Fifth Ave., New York City

End Mills

Progressive Tool & Cutter Co., Ferndale, Mich.

Etching Machines, Electric

Luma Electric Equipment Co., Toledo, Ohio

Exhausters

Meyer Blower Co., Wm. W., 1045 W. Washington Blvd., Chicago, Ill.

Experimental Work

American Tool Works, Inc., Hartford, Conn.

Fans

Meyer Blower Co., Wm. W., 1045 W. Washington Blvd., Chicago, Ill.

Files

Saw & Knife Specialty Co., Cleveland, Ohio

Files, Rotary

White Dental Mfg. Co., 135 W. 42nd St., New York, N. Y.

Filing Room Equipment

Wardwell Manufacturing Co., Cleveland, O.

Flexible Shaft Machinery

Pratt & Whitney Co., Hartford, Conn.

Furniture, Machine Shop

Western Tool & Mfg. Co., Springfield, O.

Gages, Pin, Plug, Ring and Snap

American Tool Works, Inc., Hartford, Conn.

Gages, Taper

Hartford Special Mch. Co., Hartford, Conn.

Gears

Abart Gear & Machine Co., Cicero, Ill.
Massachusetts Gear & Tool Co., Woburn, Mass.
Ohio Gear Co., Cleveland, Ohio

Grinder, Electric

Chicago Wheel & Mfg. Co., M. C. Tool Div., 116 So. Aberdeen St., Chicago, Ill.

Grinder, Flexible Shaft

Mall Tool Co., 7742 S. Chicago Ave., Chicago

Grinder, Hand

Chicago Wheel & Mfg. Co., M. C. Tool Div., 116 S. Aberdeen St., Chicago, Ill.

Classified Finding Index

Grinder, High Speed

Chicago Wheel & Mfg. Co., M.C. Tool Div.,
116 S. Aberdeen St., Chicago, Ill.
Mall Tool Co., 7743 S. Chicago Ave., Chicago

Grinders, Electric Bench

Valley Electric Corp., St. Louis, Mo.

Grinders, Pedestal Electric

Valley Electric Corp., St. Louis, Mo.

Grinder, Tool Post

De Witt Tool Co., 252 Lafayette St., New
York, N. Y.

Gutter Former

W. Robertson Mch. & Fdry. Co., Buffalo, N. Y.

Grinding Attachments, Drill

Carlson Mfg. Co., C. H., Minneapolis, Minn.

Grinding Machines, Belt

Production Machine Co., Greenfield, Mass.
Standard Electrical Tool Co., Cincinnati, O.
Walls Sales Corp., 96 Warren St., New York

Grinding Machines, Cutter, Reamer and Tool

National Machine Tool Co., Racine, Wis.

Grinding Machines, Internal

National Machine Tool Co., Racine, Wis.
Standard Electrical Tool Co., Cincinnati, O.

Grinding Machines, Portable Electric

Chicago Wheel & Mfg. Co., M.C. Tool Div.,
116 S. Aberdeen St., Chicago, Ill.
Mall Tool Co., 7743 S. Chicago Ave., Chicago
National Machine Tool Co., Racine, Wis.
Pratt & Whitney Co., Hartford, Conn.
Strand Co., N. A., 6601 N. Lincoln St., Chicago
White Dental Mfg. Co., 153 W. 42nd St.,
New York, N. Y.

Grinding Machines, Pulley Finishing

Graham Manufacturing Co., Providence, R. I.

Grinding Machines, Ring Wheel

Graham Manufacturing Co., Providence, R. I.

Grinding Wheels

Chicago Wheel & Mfg. Co., M.C. Tool Div.,
116 S. Aberdeen St., Chicago, Ill.

Grinding Wheel Dressers, Diamond

Mendes Cutting Factory, Inc., 505 Fifth
Ave., New York City

Grinding Wheels, Mounted

Chicago Wheel & Mfg. Co., M.C. Tool Div.,
116 S. Aberdeen St., Chicago, Ill.

Grinding Wheels On Shafts

Chicago Wheel & Mfg. Co., M.C. Tool Div.,
116 S. Aberdeen St., Chicago, Ill.

Hack Saw Blades

Armstrong-Bloom Mfg. Co., 341 N. Francisco
Ave., Chicago
Racine Tool & Machine Co., Racine, Wis.
W. Robertson Mch. & Fdry. Co., Buffalo, N. Y.

Hack Saw Machines

Armstrong-Bloom Mfg. Co., 341 N. Francisco
Ave., Chicago
Racine Tool & Machine Co., Racine, Wis.
W. Robertson Mch. & Fdry. Co., Buffalo, N. Y.

Hand Saws, Portable Electric

Skilaw, Inc., 3817 Elston Ave., Chicago

Hand Screw Machines, Precision Bench Type

Hardinge Brothers, Inc., Elmira, N. Y.

Heads, Boring

Flynn Manufacturing Co., Detroit, Mich.

Hoists, Portable

Sampson Tool Co., Inc., 161 Walker St.,
New York, N. Y.

Hollow Adjustable Mills

Genevieve Mfg. Co., Rochester, N. Y.

Index Centers

Wm. Carroll & Son, Norwood, Cincinnati, O.

Jigs and Fixtures

American Tool Works, Inc., Hartford, Conn.
Hamilton Tool Company, Hamilton, Ohio
Hartford Special Mch. Co., Hartford, Conn.

Keyway Cutters

Threadwell Tap & Die Co., Greenfield, Mass.

Knurls and Holders, for Turrets

Graham Manufacturing Co., Providence, R. I.

Lathe Centers

Rigid Tool Holder Co., Detroit, Mich.

Lathe Centers, Live

Sturdimatic Tool Co., Detroit, Mich.

Lathe Chip Pans

Anglo Steel Stool Co., Plainwell, Mich.

Lathe Drives

Culman Wheel Co., 1859 Altgeld St., Chgo.
Hardinge Brothers, Inc., Elmira, N. Y.

Lathes, Bench

Atlas Press Co., Kalamazoo, Mich.
Sheldon Machine Co., 3250 Cottage Grove
Ave., Chicago, Ill.

Lathes, Manufacturing

Sundstrand Machine Tool Co., Rockford, Ill.

Lathes, Precision Bench

Hardinge Brothers, Inc., Elmira, N. Y.

Lathes, Precision Bench Screw Cutting

Hardinge Brothers, Inc., Elmira, N. Y.

Leader Pins, Steel

Acme Industrial Co., 419 N. Carpenter St.,
Chicago, Ill.

Live Centers

Sturdimatic Tool Co., Detroit, Mich.

Lubricator, Automatic

Norgren Co., C. A., Denver, Colo.

Machine Knives

Saw & Knife Specialty Co., Cleveland, Ohio

Machine Shop Lights

Chicago Die Casting Mfg. Co., 2502 West
Monroe, Chicago, Ill.

Machine Tender Stands

Anglo Steel Stool Co., Plainwell, Mich.

Mandrels, Expanding

W. H. Nicholson & Co., Wilkes-Barre, Pa.
Western Tool & Mfg. Co., Springfield, O.

Magnets, Hand

Metain Coating Co. of America, Philadelphia,
Pa.

Micrometers

Bradley Machinery Co., Detroit, Mich.

Milling Attachments

Burke Machine Tool Co., Cincinnati, Ohio
Wm. Carroll & Son, Norwood, Cincinnati, O.
Standard Engineering Works, Pawtucket,
R. I.

Universal High Speed Tool Co., 548 W.
Washington Blvd., Chicago, Ill.

Milling Machines, Bench

Burke Machine Tool Co., Cincinnati, Ohio
Sundstrand Machine Tool Co., Rockford, Ill.

Classified Finding Index

Milling Machines, Precision Bench

Hardinge Brothers, Inc., Elmira, N. Y.

Milling Machines, Hand

Burke Machine Tool Co., Connecticut, Ohio
Nichols, W. H., Waltham, Mass.
Standard Engineering Works, Pawtucket,
R. I.
Sundstrand Machine Tool Co., Rockford, Ill.

Milling Machines, Plain

Burke Machine Tool Co., Connecticut, Ohio
Standard Engineering Works, Pawtucket,
R. I.
Sundstrand Machine Tool Co., Rockford, Ill.

Mills, Adjustable Hollow

Genevieve Mfg. Co., Rochester, N. Y.

Motors, Electric Ball Bearing

Valley Electric Corp., St. Louis, Mo.

Moulds & Lathes, Hammer and Vise

Johnston Tool Co., East Providence, R. I.

Nibbling Machines

Libert Machine Co., Green Bay, Wis.
National Machine Tool Co., Racine, Wis.

Numbering Machines

Numberall Stamp & Tool Co., Staten Island,
N. Y.

Pigeon Hole Sections

Anglo Steel Steel Co., Plainwell, Mich.

Pins, Leader And Dowel

Acme Industrial Co., 419 N. Carpenter St.,
Chicago, Ill.
Baumbach Mfg. Co., E. A., 1812 So. El-
bourne Ave., Chicago

Pipe Cutters

Ridge Tool Co., Elyria, Ohio

Pipe Vises

Ridge Tool Co., Elyria, Ohio

Pipe Wrenches

Ridge Tool Co., Elyria, Ohio

Press Brakes

Drels & Krump Mfg. Co., 7440 Loomis
Bldg., Chicago, Ill.

Presses, Arbor

Atlas Press Co., Kalamazoo, Mich.
W. H. Nicholson & Co., Wilkes-Barre, Pa.
Sheldon Machine Co., 8235 Cottage Grove
Ave., Chicago, Ill.
Wilson, B. E., Buffalo, N. Y.

Presses, Extrusion

Norin Engineering Co., 356 N. Union Park
Court, Chicago, Ill.

Presses, Hydro-Mechanical

Norin Engineering Co., 356 N. Union Park
Court, Chicago, Ill.

Presses, Power

Drels & Krump Mfg. Co., 7440 Loomis
Bldg., Chicago, Ill.

Presses, Punch

Drels & Krump Mfg. Co., 7440 Loomis
Bldg., Chicago, Ill.
Lewthwaite Mch. Co., T. H., 311 E. 47th, N. Y.

Production Tools

Genevieve Mfg. Co., Rochester, N. Y.

Pullers, Gear and Wheel

Armstrong-Dray & Co., 315 N. Sheldon St.,
Chicago, Ill.

Punch Press Feeds

Wittak Mfg. Co., 4309 W. 34th Place, Chgo.

Punch Press Guards

David J. Ross Co., Benton Harbor, Mich.

Punch, Shear and Bender, Hand

Armstrong-Hum Mfg. Co., 341 N. Francisco
Ave., Chicago

Punches, Hand

Armstrong-Hum Mfg. Co., 341 N. Francisco
Ave., Chicago
Buffalo Forge Company, Buffalo, N. Y.
Lewthwaite Mch. Co., T. H., 311 E. 47th,
New York
Whitney Metal Tool Co., Rockford, Ill.

Punches and Dies

Lewthwaite Mch. Co., T. H., 311 E. 47th, N. Y.

Punches and Shears

Sampson Tool Co., Inc., 101 Walker St.,
New York, N. Y.

Pyrometers

Illinois Testing Laboratories, Inc., 160 W.
Austin Ave., Chicago
Russell Electric Co., 338 W. Huron St., Chgo.

Pyrometers, Portable & Stationary

Illinois Testing Laboratories, Inc., 160 W.
Austin Ave., Chicago
Russell Electric Co., 338 W. Huron St., Chgo.

Racks, Cut

Massachusetts Gear & Tool Co., Woburn,
Mass.

Reamer Holders

W. H. Nicholson & Co., Wilkes-Barre, Pa.

Riveters, Multiple Spindle

Grant Mfg. & Mch. Co., Bridgeport, Conn.

Riveters, Pneumatic

Grant Mfg. & Mch. Co., Bridgeport, Conn.

Riveting Machines

Grant Mfg. & Mch. Co., Bridgeport, Conn.

Roll Cutters

Armstrong-Hum Mfg. Co., 341 N. Francisco
Ave., Chicago
Lewthwaite Mch. Co., T. H., 311 E. 47th, N. Y.

Safety Devices

David J. Ross Co., Benton Harbor, Mich.

Classified Finding Index

- Saws, Band and Circular for Metal**
 Saw & Knife Specialty Co., Cleveland, Ohio
- Saw Sharpening Machines**
 Wardwell Manufacturing Co., Cleveland, O.
- Scraping Machines**
 Anderson Bros. Mfg. Co., Rockford, Ill.
- Shafts, Flexible**
 Pratt & Whitney Co., Hartford, Conn.
 Strand Co., N. A., 5081 N. Lincoln St., Chgo.
 White Dental Mfg. Co., 152 W. 42nd St., New York, N. Y.
- Shaping Machines**
 Osborne & Sexton Machy. Co., Columbus, O.
- Shear Blades**
 Saw & Knife Specialty Co., Cleveland, Ohio
- Shears**
 Libert Machine Co., Green Bay, Wis.
- Shears, Hand**
 Armstrong-Bloom Mfg. Co. 341 N. Francisco Av., Chicago
 Lawthwaite Machine Co., T. H., 311 E. 47th St., New York
 Whitney Metal Tool Co., Rockford, Ill.
- Shear, Power**
 Dreis & Krump Mfg. Co., 7440 Loomis Blvd., Chicago, Ill.
 Libert Machine Co., Green Bay, Wis.
- Shears, Sittling**
 National Machine Tool Co., Racine, Wis.
 Dreis & Krump Mfg. Co., 7440 Loomis Blvd., Chicago, Ill.
- Sheet Metal Machinery**
 Libert Machine Co., Green Bay, Wis.
- Shop Spotlights**
 Chicago Die Casting Mfg. Co., 2502 West Monroe, Chicago, Ill.
- Special Tools and Machinery**
 American Tool Works, Inc., Hartford, Conn.
 Standard Engineering Works, Pawtucket, R. I.
- Speed Reducers**
 Abart Gear & Machine Co., Cicero, Ill.
 Cullman Wheel Co., 1359 Altgeld St., Chgo.
 Ohio Gear Co., Cleveland, Ohio
- Spot Welding Machines, Speed.**
 Elster Engineering Co., Inc., Newark, N. J.
 Taylor-Winfield Corp., Warren, Ohio
- Sprockets**
 Colman Wheel Co., 1359 Altgeld St., Chgo.
 Massachusetts Gear & Tool Co., Woburn, Mass.
 Ohio Gear Co., Cleveland, Ohio
- Stampings**
 Gerding Brothers, Cincinnati, Ohio
- Steels and Chairs**
 Angle Steel Steel Co., Plainwell, Mich.
- Straightening Machines**
 Whitney Metal Tool Co., Rockford, Ill.
- Stud Setters**
 Proconier Safety Chuck Co., 14 S. Clinton St., Chicago
- Tables**
 Angle Steel Steel Co., Plainwell, Mich.
- Tap Extractors**
 Walton Co., Hartford, Conn.
- Tap Holders**
 Proconier Safety Chuck Co., 14 S. Clinton St., Chicago
- Tapping Attachments**
 Proconier Safety Chuck Co., 14 S. Clinton St., Chicago, Ill.
- Tapping Jigs, Universal**
 Heuser Mfg. Co., 1638 No. Paulina St., Chicago, Ill.
- Tapping Machines and Attachments**
 Burke Machine Tool Co., Conneaut, Ohio
 Cleerehan Mch. Tool Co., Green Bay, Wis.
 Httco Tool Co., Inc., 594 Johnson Avenue, Brooklyn, N. Y.
 Proconier Safety Chuck Co., 14 S. Clinton St., Chicago, Ill.
 Whitney Metal Tool Co., Rockford, Ill.
- Thermometers, Resistance Type**
 Httmels Testing Laboratories, Inc., 150 West Austin Ave., Chicago, Ill.
- Threading Machines, Automatic, Stud**
 Grant Mfg. & Mch. Co. Bridgeport, Conn.
- Threading Tools**
 Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago
 Ridge Tool Co., Elyria, Ohio.
- Tool Holders**
 Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago
 Rigid Toolholder Co., Detroit, Mich.
 Western Tool & Mfg. Co., Springfield, O.
- Tool Post Grinders**
 De Witt Tool Co., 232 1/2 Fayette St., New York, N. Y.
- Tools, Abrasive**
 White Dental Mfg. Co., 152 W. 42nd St., New York, N. Y.
- Tools, Boring**
 Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago
- Tools, Lathe and Planer**
 Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago
- Tools, Machinists'**
 Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago
- Tube Flanging Machines**
 Grant Mfg. & Mch. Co., Bridgeport, Conn.
- Trucks**
 Angle Steel Steel Co., Plainwell, Mich.
- Universal Drill Jigs**
 Heuser Mfg. Co., 1638 No. Paulina St., Chicago, Ill.
- Universal Joints**
 American Tool Works, Inc., Hartford, Conn.

Classified Finding Index

Used and Rebuilt Machinery

Alamo Engine Co., Hillsdale, Mich.
 American Machinery Co., Cleveland, Ohio
 Baiyca Co., Inc., 180 W. 18th St., New York, N. Y.
 Bleser Mfg. & Mch. Co., Springfield, Ill.
 Brotherhood & Son, Percy M., 114 Liberty St., New York, N. Y.
 Brown Machinery Co., St. Louis, Mo.
 Brownell Machinery Co., Providence, R. I.
 Cincinnati Mch. & Supply Co., Cincinnati, O.
 Consolidated Used Machinery Mart, 440 N. Oakley Blvd., Chicago, Ill.
 Craig, Jr., Thomas H. Bridgeport, Conn.
 Davis Machinery Co., Toledo, Ohio
 Denny, W. I., 618 W. Lake St., Chicago
 Detroit Manufacturers Supply Co., Detroit
 De Witt Tool Co., 252 Lafayette St., New York City
 Eastern Machinery Co., Cincinnati, O.
 Emerman, Louis E. & Co., 1781 Elston Ave., Chicago, Ill.
 Easley Machinery Co., E. L., 825 Mason St., Chicago, Ill.
 George, James W., Detroit, Mich.
 Goldman, Harvey H., Detroit, Mich.
 Grigoby-Gruson, Inc., 5804 Dickens Ave., Chicago, Ill.
 Harben Machinery Equipment Co., 30 S. Clinton St., Chicago, Ill.
 Hill, Clark & Co., 648 W. Washington Blvd., Chicago, Ill.
 Ideal Machinery Co., Plainwell, Conn.
 Indianapolis Machinery & Supply Company, Indianapolis, Ind.
 International Machinery Co., Detroit, Mich.
 Interstate Mch. Co., 130 S. Clinton, Chgo.
 Iroquois Machinery Co., Buffalo, N. Y.
 Johnson & Sons Machinery Co., Wm. C., St. Louis, Mo.
 Jones Machine Tool Co., Cincinnati, Ohio
 Kennard-Baskin Mch. Corp., 160 Liberty St., New York, N. Y.
 Klauer Mch. Co., E. L., St. Louis, Mo.
 Lake Mch. Co., 654 W. Lake St., Chicago
 Lohn, Inc., William J., 6 Howard Street, New York City
 Long Machinery Corporation, Boston, Mass.
 Lucas & Son, J. L., Bridgeport, Conn.
 McCabe & Sheeran Mch. Corp., 50 Church St., New York City
 McDonald Machinery Co., St. Louis
 McGill Machine Co., Birmingham, N. Y.
 MacFarland Mch. Co., Pittsburgh, Pa.
 Meyer Blower Co., Wm. W., 1045 West Washington Blvd., Chicago, Ill.
 Midwest Equipment Co., 628 W. Lake St., Chicago, Ill.
 Mid-West Machine Tool & Supply Company, Davenport, Iowa
 Miles Machinery Co., Saginaw, W. S., Mich.
 Morey & Co., 45 Mill St., Astoria, Long Island, N. Y.
 Noble Machinery Co., 217 Centre St., New York, N. Y.
 Norfolk Shipbuilding & Drydock Corporation, Norfolk, Va.
 Norton-Broadway Machinery Co., Cincinnati, Ohio
 O'Brien Machinery Co., Philadelphia
 Ohio Mch. & Supply Co., Cincinnati, Ohio
 Ott Machinery Sales Co., Detroit, Mich.
 Osborne & Sexton Mch. Co., Columbus, O.
 Pattison Supply Co., W. M., Cleveland, O.
 Reliance Machinery Sales Co., Pittsburgh, Pa.
 Reynolds & Son, Geo. T., Providence, R. I.
 Ritterbush & Co., Inc., 80 Church Street, New York City
 Riverside Machinery Depot, Detroit, Mich.
 Rosenkrantz & Weisbecker, 3309 A Singer Bldg., New York City
 Russell Machine Co., Pittsburgh, Pa.
 Scott-Bansbach Mch. Co., 4807 W. 20th St., Chicago
 Segal Machinery Co., 309 W. Lake St., Chicago, Ill.
 Strong, Carlisle & Hammond Co., Cleveland
 Sun Machinery Co., 28 Van Buren Street, Newark, N. J.
 Surplus Stock & Mch. Co., 1123 W. Lake St., Chicago

Used and Rebuilt Machinery—Cont.

Surplus Material & Mch. Co., Detroit, Mich.
 United Machinery & Supply Co., St. Louis, Mo.
 Victor Machinery Co., 128 S. Clinton Street, Chicago, Ill.
 Victor Machinery Exchange, 251 Center St., New York City
 Wain Mch. Sales, Chas. E., Detroit, Mich.
 West Penn Machinery Co., Pittsburgh, Pa.
 White Mch. Co., A. D., 108 N. Jefferson St., Chicago
 Wigglesworth Mch. Co., Cambridge, Mass.
 Winternitz & Co., Samuel, First National Bank Bldg., Chicago, Ill.
 Wolnick Machinery Sales, Elst & Marshall Blvd., Chicago, Ill.

Valves, Foot, Lever & Solenoid

Nicholson & Co., W. H., Wilkes-Barre, Pa.

Vises, Drilling Machine

Armstrong-Bloom Mfg. Co., 841 N. Francisco Av., Chicago
 Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago
 Graham Manufacturing Co., Providence, R. I.
 Heuser Mfg. Co., 1638 No. Paulina St., Chicago, Ill.
 L-W Chuck Co., Toledo, Ohio
 Martin Tool & Die Works, J. E., Springfield, O.
 Sampson Tool Co., Inc., 101 Walker St., New York, N. Y.
 Shelden Machine Co., 3255 Cottage Grove Ave., Chicago, Ill.

Vises, Drill

Johnson Tool Co., East Providence, R. I.

Vises, Machinists'

L-W Chuck Co., Toledo, Ohio
 Shelden Machine Co., 3255 Cottage Grove Ave., Chicago, Ill.
 Western Tool & Mfg. Co., Springfield, O.

Vises, Milling Machine

Graham Manufacturing Co., Providence, R. I.
 Hartford Special Mch. Co., Hartford, Conn.
 L-W Chuck Co., Toledo, Ohio
 Shelden Machine Co., 3255 Cottage Grove Ave., Chicago, Ill.
 Standard Engineering Works, Pawtucket, R. I.

Vises, Shaper

Graham Manufacturing Co., Providence, R. I.
 L-W Chuck Co., Toledo, Ohio

Waste Cans

Angie Steel Stool Co., Plainwell, Mich.

Welding Machines, Electric Spot

Eisler Engineering Co., Inc., Newark, N. J.

Welding Machines, Resistance

Eisler Engineering Co., Inc., Newark, N. J.

Wheel Dressing Diamonds

Mendes Cutting Factories, Inc., 506 Fifth Ave., New York City

Wheel Pullers

Armstrong-Bray & Co., 315 N. Shelden St., Chicago, Ill.

Wheels, Grinding

Chicago Wheel & Mfr. Co., M.C. Tool Div., 116 S. Aberdeen St., Chicago, Ill.

Woodworking Machinery

Tannewitz Works, Grand Rapids, Mich.

Wrenches, Ratchet

Lowell Wrench Co., Worcester, Mass.

Wrenches, Socket

Lowell Wrench Co., Worcester, Mass.

Used and Rebuilt Machinery Section

Lists of Used and Rebuilt Machinery, either For Sale, Wanted, or For Exchange, set in uniform style, will be published in the Classified Section at the rate of 60 cents a line across the page, each issue, plus \$3.00 for name and address. Minimum charge, \$6.00. No display permitted.

Write directly to those offering the machines for sale, for prices and full descriptions. If what you seek is not advertised, use the blank enclosed to make known your wants in either new or used machinery and the publisher will pass them along to the advertisers.

FOR SALE BY

Long Machinery Corp. - - - - - **56 Pearl St., Boston, Mass.**
PLANER
 Niles-Bement-Pond 60"x16' planer, two heads, power elevating cross rail, countershaft.....\$1,500.

FOR SALE BY

J. Bleser Mfg. & Machy. Co., 16th & Madison St., Springfield, Ill.
 Air comp., 6x6 Ing.-Rand.....\$ 175. | Miller, No. 3H LeBlond.....\$ 500.
 Knife grinder, 79"..... 175. | Miller, No. 2 Garvin u..... 195.
 Lathe, 13x6 So. Bend..... 160. | Radial drill, 7' Bement..... 395.
 Lathe, 15"x10' So. Bend m.d.. 275. | Shaper, 20" S. & Mills..... 195.
 Lathe, 36"x18' L. & Ship. m. d. 1095. | Slotter, 13" Bement..... 295.

FOR SALE BY

H. F. Wolnick Machinery Sales

Phone Lawndale 1777 - - - - - **21st & Marshall Blvd., Chicago**
 Drill, 4-spindle Redington.....\$ 65. | Mill, No. 3S Cinc., univ., s. p. d.
 Drill, 24" Sibley..... 35. | Press, No. 78 Toledo, m. d., geared.
 Knife grinder, M. & Dixon.... 100. | Presses, Nos. 1 to 6, o. b. i.
 Lathes, 14, 16, 18, 20" to 12' | Saw, No. 4B Cochrane & Bly..\$150.
 Mill, hand, heavy duty..... 90. | Gear hobbers, generators, shapers.

FOR SALE BY

Segal Machinery Co., - - - - - **810 W. Lake St., Chicago, Ill.**
 Brake, 6, D. & K. 3/16" cap., m. d. | Lathe, 26x14 Bridgeport, tap. att.
 Drill, 4' Bickford, s. p. d., gear box. | Miller, No. 4 Fox univ. s. p. d.
 Grinder, No. 60 Heald internal, cyl. | Screw mche., No. 4 W. & S., g. f. h.
 Lathe, 16x6 L. & S. q. c. g., t. a. | Shaper, 24" Milwaukee, b.g., sw. v.
 Lathe, 16x6 Hendey, quick change gear, tap attachment, yoke head.....\$ 375.
 16x14 and 10x14 Ingersoll-Rand compressor, 600 cu. ft. with unloader... 425.

FOR SALE BY

Herben Machinery & Equipment Co., 30 S. Clinton St., Chicago, Ill.
 Brakes, apron, 8 & 10', 14, 16, 18 ga. | Saws, Nos. 1, 2, 5 Marvel; 6x6, 9x9 high speed Peerless.
 Brakes, press, 10' 10 ga., 10' 8". | Screw machines, auto., 14 Gridley;
 Drills, 14, 16, 26, 36", 1, 2, 3, 4-spd., high speed, ball bearing. | Nos. 0 & 00 B. & S., 3" m. d.
 Lathes, Precision bench and h. d., large stock. | Shears, pwr. sq., 10' 4"; 10' 14 ga.
 Presses, Nos. 2, 3, 5 L. & J. No. 5 | Slitter, 36" Yoder "G", m. d.
 Federal, o. b. i., geared. | Welders, spot, 5 and 10 k. w.
 Rolls, 8' and 10'. | Welders, arc, 200 and 300 amp.

USED AND REBUILT MACHINERY

FOR SALE BY

Marr-Gallbreath Machinery Co.,

55 Water St., Pittsburgh, Pa.

Quality Not Reflected in These Low Prices.

Air compressor, 5"x5" Ing.-R., m.d.
Air compr., 14"x12" Sullivan, 100 lb.
Air comp., 12"x10" Chgo., a. c. mtr.
Air comp., tank and 2 h. p. motor.
Air comp., tank, 3 or 5 h. p. motor.
Air compressor, 6"x6" Worth, vert.
Bender & straightener, No. 4 H. & J.
Blowers, Buffalo Nos. 3E & 4E,
1/60/220.

Blower, No. 5 North American,
motor 3/60/220.

Bolt threader, 4" Geometric b. or m.d.

Boring mill, No. 0 G. & L., 3 1/2" bar.

Boring mill, 30" Colburn, tr. hd.

Boring mill, 34" Bullard vtl. thread
attachment.

Boring mill, 35"-44" N-B-P., sh. m.d.

Boring mill, 84" Niles, friction feed.

Bor. mill, hor., fl. type, 6" bar, m. d.

Brake, 8' x 18 ga. Chicago hand.

Brake, Keene toggle, 10' x 20 ga.

Buffer, 5 h. p. Hisey-W., 3/60/220.

Bulldozer, No. 6 W-W., clutch, b. d.

Chain, Morse, 13' 8" x 6" x 1" pitch.

Crusher, No. 1 Williams, hammer
type, belt drive.

Crusher, Allis-Chalmers, 9x9", 3-roll,
belt drive.

Die shaper, vert., Hanson-Whitney.

Die sinker, No. 3 P. & W., r. t.

Driller, 5, 6-sp. Detroit, chucks.

Drill, 5, 6 spdl. L-G., b. b., m. d.

Drill, radial, 3 1/2" Cin-Bick. t. a., m. d.

Drill, 20" Barnes, all geared.

Engine, Diesel 166 h. p. DeLaVergne

Furnace, gas tempering, 10x10", pot.

Gear cutter, 18" Newark.

Gear cutter, (Pinion) 1x1" S. & C.

Generator, 125 k. v. a. 3/60/220/900.

Generator, 50 k. v. a. 3/60/220/1200.

Grinder, 7 1/2 h. p., U. S. dbl. end, 3/60/440

Grinder, 5 h. p. Hisey-W., 3/60/220.

Grinder, disc, vert 30" Gardner, m. d.

Grinder, flex. shaft motor 1 1/2 h. p. 1/60.

Grinder, T. & C. 1 & 1 1/2" Cin. no att.

Grinder, T. & C. 2 Ohio few attach.

Grinder, T. & C. No. 1 G. & L., for
motor drive.

Grinder, pl. 11 B. & S. 4x30" (cheap).

Hammer, Syntro Elec., 1/60/110/
1600.

Hammer, 30 lb. United, power.

Hammer, No. 2B & No. 4 B Nazel,
motor drive.

Hammer, 800 lb. Erie s. f. steam.

Hammer, 1000 lb Chbg. steam drop.

Header, cold 3" Waterbury-F.

Keyseater, 24" x 2 1/2" Morton.

Lathe, bench, 7" x 22" Goodell-Pratt.

Lathe, Fox type, 16" x 8" Springfield.

Lathe, 11" x 4" South Bend, chuck.

Lathe, 11" x 6" Star, chuck.

Lathe, 34" x 14" Hendey, q. c. g., tie-b.

Lathe, 24" x 16" LeBlond, 6" raising
blocks, chuck.

Lathe, 12" x 8" R. P., g. h., s. p. d.

Lathe, 18" x 8" L. & S., cone, t. a.

Lathe, 18" x 8" Rahn-L., q. c. g., t. a.

Lathe, 26" x 12" Bridgeford, t. a.

Lathe, 36-48" x 16" Finfield, chuck, b. d.

Lathe, 16" x 6" LeBlond, q. c. g.

Lathe, 20" x 8" Hendey, t. a.

Lathe, 14" x 19" Fly automatic.

Magnetic chuck, 14" x 40" Heald.

Miller, No. 0 Steptoe, hand, vise.

Miller, No. 2 Rockf'd, hand, on col.

Miller, 18" Cin. Mfg., mtr. 3/60/220.

Millers, No. 6 Transit, mfg. type,
13x49" table.

Miller, Garvin, 14-MP. & 21 plain.

Miller, plain, No. 2A, Hendey, s. p. d.

Miller, No. 4 Ohio, table 101"

Milling & keyway att., No. 5 So. B.

Motors, single and 3-phase (50).

Pipe dies and stocks 1/2" to 4" hand.

Pipe machines, 8" Jarecki, belted.

Pipe machines, 8" Williams, m. d.

Planers, Gray, 34x24x6" : 56x48x10".

Press, arbor, Nos. 1 & 3 Greenard;
30-ton Lourie.

Press, Arch, No. 3A Mossberg.

Press, Arch, No. 3A Mossberg dial
feed, also roll feed, (2).

Press, D. C. No. 138A Stoll, 3" stroke.

Press, embossing 50-ton Ferracute.

Press, horn, No. 2 Michigan.

Press, horn, 42-h. p. Toledo.

Press, o. b., bed 34x30, pl. 2" st., 35-t.

Press, o. b. i., No. 20 Bliss, 2" stroke.

Press, o. b. i., No. 18 Bliss, 1 1/2" str.

Press, o. b. i., No. 8 Bliss bench, 1" str

Press, o. b. i. 1 kv; 2 Thomas; 4 Nia.

Press, screw, No. 87 Niagara.

Press, wheel, 60-ton, 34" W-S.

Punch, SE., 24" tht. 1 1/2" x 1 1/2", m. d.

Punch, SE., 36" tht. 1 1/2" x 1 1/2", m. d.

Punch & shear, s. e., No. 6 L. & A.

Punch & shear, s. e., No. 4 L. & A.

Punch & shear, d. e., cap 1 1/2" x 1 1/2", m. d.

Reduction gear, type 5 W Foote, 45:1

Riveter, No. 8A, Hi-Speed, m. d.

Rolls, 10" x 3" U. S. Forming, 4 roll.

Rolls, 48" x 4" Niagara, d. e., hand
or power.

Saw, cold, Espen-Lucas, 7" rds.

Saw, No. 0 Hunter, m d sharpener.

Screw mach., auto. "G" Gridley, 1 1/2".

Shaper, 16" Ohio, crank b. d.

Shaper, 20" Cincinnati, motor dr.

Shaper, 21" Smith & Mills.

Shaper, 24" Baker b. g. V-rim, b. d.

Shaping mch., Hanson-W. univ., 4 1/2"

Shear, angle, 6x6x1 1/2", H. & J. No. 2,
mounted on turntable, for m. d.

Shear, plate, 72" x 1 1/2" cap. Bertsch,
24" gap, motor drive.

USED AND REBUILT MACHINERY

Marr-Galbreath Machinery Co.—Continued.

Shear, slitting, No. 24-S Buffalo, 4".	Turret, 2"x24" J. & L., chuck.
Shear, gap, 42"x18"x18" gap.	Unishear, 36" throat, 14 ga., for m.d.
Shears, squar., 60, 42, 36, 30"x18 ga.	Welders, arc, 300 & 400 amps.
Tapping chucks, 3/16"; 1/2" and 3/4".	Welders, arc, 35 amp., transformer.
Testing mach., 100-ton Olsen, comp.	Welding & cutting generator, Carbic
Transmission, No. 000 Reeves, 5:1.	

Partial List. Get Our Complete Stock List.

FOR SALE BY

International Machinery Co., 3178 Bellevue Ave., Detroit, Mich.

MILLS

No. 3 Van Norman, s. p. d.	No. 4 Cincinnati pl. or vert. s. p. d.
No. 3 Cincinnati univ. comp., cone.	No. 2BS Milwaukee.

GRINDERS

Nos. 1, 2, 3 Brown & Sharpe univ.	84" Diamond face m. d.
No. 11 Brown & S. plain, s. p. d.	14" Pratt & W. vert., b. b. spindle.
No. 2 Brown & Sharpe surface.	Rivett & Heald internals.
No. 2 Diamond surface.	No. 1 1/2 Cincinnati complete.

DRILLS

No. 3 Avey-Matic power feed.	Four-spindle Sipp power feed.
No. 2B Edlund three spindle, power feed.	One and two spindle No. 2 Colburn.
Two-spindle Leland & Gifford.	No. 363 Barnes all geared.
	All sizes Natco multiple.

PUNCH PRESSES

No. 75 Toledo inclined, 3" stroke.	6—No. 18 Bliss, 1 1/2" stroke, m. d.
No. 20 Bliss o. b. i. grd., 4" str., m. d.	P-4 Ferracute motor drive.

MISCELLANEOUS

16x6 Hamilton lathe, grd. hd. m. d.	1", 1 1/2" & 2" Landis bolt cutters.
No. 4 Warner & Swasey universal	16x8 and 18x8 Hendey lathes.
No. 3A Warner & Swasey.	Sleeper and Hartley spring coiling machine.
9x9 Peerless hack saw.	

FOR SALE BY

Brown Machinery Co., 2333 N. 9th St., St. Louis, Mo.

Brakes, 8' 16 & 16 gauge; 8' 10 gauge motor drive; 12' 15 gauge hand.	Planer, 42"x42"x10' Pond.
Drills, all sizes.	Presses, straight side, No. 73 Swaine;
Folders, all sizes, new and used.	No. 7 Zeh & Hahnemann.
Gear hobbers, G. & E. 12" & 24".	Presses, o. b. i. Nos. 5 & 6 Consolidated comb. grd.; Nos. 1, 2, 3, 4
Grinders, cylindrical, 10x30" Norton, 12x36" Modern.	Loashbough-Jordan.
Grinders, disc, No. 41-20 Besly, m. d.; No. 6-20 Besly; No. 220 Badger automatic.	Punches, sgl. end, Cleveland "C" 26" thr. 1/2" in 1/2"; Rock River Style L rapid action, 24" thr. 1/2" in 1/2"; No. 6 L. & A. 24" thr. 1/2" in 1/2"; No. 7 L. & A. 10" thr. 1/2" in 1/2".
Groover, power, 6' horn.	Punch & shears, double end, No. 9C
Hammers vertical 40 & 80-lb. Perfect; 75-lb. Dupont; 130-lb. Justice.	Beloit 12" thr. 1/2" in 1/2"; No. L-10
Lathes, 16"x6' & 8' Monarch q. c. g.; 16"x8' Monarch grd. head m. d.; 18"x12' American grd. hd., taper & turret attach.; 20"x8' LeBlond, heavy, q. c. g.; 28"x12' Putnam, taper attach, 36"x18' Niles q. c. g.	Badger 10" thr. 1/2" in 1/2".
Lathes, turret, all sizes.	Riveters, No. 5A High Speed 1/2" cap.; Grant 1/2"; Allen jaw riveter.
Millers, plain, No. 1 1/2 American; No. 3 Brown & Sharpe; No. 3B Owen vert. attach.; No. 3 Fox.	Screw machines., No. 2 1/2 P. & W.; 1x15" P. & W.
Millers, universal, No. 2 Hendey-Norton; Lincoln type, No. 4	Seamer, double, Swaine hand, 24 ga.
Hendey; slab, Briggs type No. 11.	Shapers, 20" Columbia & Queen City; 24" Ohio.
	Shears, foot power, sq., 30" & 36".
	Shear, sq. 50" Excelsior, gap 10 ga.
	Shear, rotary bevel, 1/2" Lennox.
	Welders, 20 k.w. Agnew; 5 k.w. Dyer.

USED AND REBUILT MACHINERY

FOR SALE BY

Brownell Machinery Co.,

150 Pine St., Providence, R. I.

Drill, radial, 4' American.
Hammer, 125 lb. Beaudry Champion
Jarring machine, Herman, 42" dia.
Lathe, 60"x30" Poud.
Lathe, 32"x28" New Haven.

Lathe, 27"x27" Schumacher & B.
Marking machine, small hand.
Miller, No. 4 Cincinnati vertical.
Miller, No. 1 plain Brown & Sharpe.
Screw mche., No. 6 B. & S., g. f. h.

FOR SALE BY

The E. L. Easley Machinery Co.

Telephone Lincoln 6320

831 Rees St., Chicago

Boring bar, Rochester, 4" spindle.
Boring bar, Cleveland, 2 1/2" spindle.
Boring mill, 24" Bullard, prod. type.
Drill, No. 3 Avey, high speed, b. b.
Drill, radial, 5' Cincinnati-Bickford.
Lathe, 18"x8" Monarch, motor in leg.

Miller, No. 13-B, B. & S., mtr. dr.
Press, No. 3 1/2-B Bliss, toggle draw.
Saw, 6"x8" Peerless, high speed.
Shaper, 20" American, auto-oiled.
Shear, 42" Stoll, gap, 16 ga.
Wheel press, N. B. P., 400 ton.

FOR SALE BY

Reliance Machinery Sales Company

1405 Brighton Place, N. S.

Pittsburgh, Pa.

Brake, No. 205 Chicago, 10"x3/16",
motor 3-60-220.
Bulldozer, No. 9 Williams-White;
24" stroke, 45" die space, weight
about 70,000 lbs.
Drill, 6 spdl. Barnes, No. 2 m. t.
Drill, 4 spdl. Colburn No. 4.
Drill, radial, 2 1/2" Mueller, a. p. d.
Hoist, elec. 3 ton Shepard, a. c.
Lathe, 18"x8" L. & S. pat. hd., 230 v.
Lathe, 48"x20" Betts-B., a. c., m. d.
Miller, No. 2AS Milwaukee, double
over arm, single pulley.
Miller, No. 1 U. S. hand.

Miller, No. 2 1/2 Rockford, cone.
Miller, vert., No. 5-C Becker.
Press, No. 24 Adriance horning,
swinging table, 2750 lbs.
Press, s.s., No. 66 Cons. grd., 6" str.
Presses, Nos. 3 1/2 & 4 Toledo, o. b. i.
Press Perkins dbl cr., 24" bet. hsg.
Press brake, 8' Cincinnati steel, 12
gauge, 10' die length, motor drive,
3-60-220; like new.
Punch, L&A 1" thru 1", 24" tht.
Shears, alligator, 1 1/2 to 4" sq. cap.
Shear, 11"x18 ga. Canton.

FOR SALE BY

Norfolk Shipbuilding & Drydock Corporation,

Foot of Claiborne Avenue,

Norfolk, Virginia.

Angle punch, Southwark, 1" hole, motor drive.....	500.
Bending slabs, 5'x7'x3" deep.....	25.
Crane, McMyler Interstate, 8 wheel type, built in 1913, cap. 25 tons...	2,500.
Drill presses, 20" back gear, belt drive (2).....	55.
Drill press, 22" Milwaukee, sliding head, belt drive.....	85.
Emery grinder, Leland & Faulconer No. 1, belt drive.....	25.
Emery stand, heavy double, with pedestal, belt drive.....	20.
Furnace, angle and plate, complete, with 5 Hauck burners to a side, 50" door, 24" long, with 2 ton Harrington crane for handling, cast iron door with counterweight, comp. with blower for Lincoln Elect. 10 h.p.	450.
Grinding machine, Sellers, with pump, belt drive.....	25.
Lathes, 18" Bradford, quick change, 54" centers, belt drive (3).....	225.
Lathe, 18" Bradford, loose change, 54" centers, belt drive.....	150.
Planer, 24"x24"x6" Whitcomb, one head, belt drive.....	125.
Punch and shear, combination, No. 53 Hendley & Whitmore, cutter blade 6 1/2", punch up to 1" hole, weight 2,000 lb.	60.
Punch and shear, 48" Southwark, double end, motor drive.....	950.
Rolls, set 3"x48" Pyramid hand, open end.....	65.
Shaper, 14" Steptoe, belt drive.....	150.
Shear, 80" Long & Allstatter.....	625.

USED AND REBUILT MACHINERY

FOR SALE BY

West Penn Machinery Company

1210 House Building,

Pittsburgh, Pa.

Air compressors, 30 to 2500 cu. ft.
 Baling press, No. 12-P Logemann.
 Bor. mills, 24" & 42" Bullard New Era.
 Bor. mill, 36" Bullard, side hd., s.p.d.
 Boring mill, 42" Bullard, 2 heads.
 Boring mill, 48" Gisholt r.p.t., 2 hds.
 Boring mill, 72" Niles, 2 heads, m.d.
 Boring mill, horiz. 64" Niles, fl. type.
 Brake, 7' x 10 ga. Chicago, m. d.
 Brakes, 3' & 10' x 16" Chicago, m. d.
 Brake, hand, 10' x 18 ga. Chicago.
 Buff. & pol. O. B. Bridge., 40" C-c.
 Bulldozers, Nos. 2, 4, 6, 8, 26, & 30.
 Cranes, Electric Traveling.
 Crane, crawler, gas., No. 2 Nor'wes.
 Draw bench, 150,000 lb. Stand, m. d.
 Drill, radial, 4' Prentice, t. a. b. d.
 Drills, rad. 4', 5' & 6' Cin.-Bick, m. d.
 Drills, radial 4' & 6' Dreses, m. d.
 Drill, Baker, table 23 1/2 x 17", s. p. d.
 Drills, upright 10" to 36".
 Flanger, McCabe, 1" capacity, dies.
 Forging mch. 14" Acme, st. fr. b. d.
 Gear cutters, 11", 18" & 24" Gleason.
 Gear cutter, spur, D.-S. cap. 2 1/2" x 3 1/2".
 Gear cutter, spur, 26" x 10" Newark.
 Grinder, crank, No. 4A Landis spec.
 Grinder, die, No. 101 Bridg., m. d.
 Grinder, disc, No. 8-20" Besly, b. d.
 Grinder, knife, 216" Bridge., 26" wheel.
 Grinder, knife, 60" Bridgeport, m. d.
 Grinder, surf., Walker 26" x 9", mag. ck.
 Grinder, surf. 42" Spring, tbl. 18 x 84".
 Grinder, sur. 14" Pratt & W., m. d.
 Grinder, surf. Diamond, table 48" x 16".
 Grinder, No. 72 Heald sizematics.
 Grinder, tool & cut., No. 2 Walker.
 Hammer, Blacker, power, 35-lbs.
 Hammer, pwr., 100 lb. Brad. cush.
 Hammers, Nos. 2B, 3-B, 4B. Nazel.
 Hammers, steam, 600 lb. to 6000 lbs.
 Hammers, stm. dr. 1500 to 10000 lb.
 Header, No. 2 Wat. Far., o. d., tr. st.
 Jig borer, Swiss m. d., No. 5.
 Lathe, 16" x 6' LeBlond, q. c. g., d. b. g.
 Lathe, 24" x 12' American, q. c. g., b. d.
 Lathe, 24" x 14' LeBl., g. h. q. c. g. m. d.
 Lathe, 24" x 16' Bridgeford, g. h. d. m. d.
 Lathe, 30" x 18' LeBl., g. h. q. c. g. m. d.
 Lathe, 48" x 30" Pitts' h. p. c. g., b. d.
 Lathe, 54" x 27' Pond, g. h. p. c. g. m. d.
 Lathe, turret, No. 6 Warner & S.
 Lathe, turret, 18" Libby, m. d.
 Lathe, turret, 24" Steinle, 6 1/2" hole.
 Lathe, turret, 34" Gisholt, b. d.
 Lysholm tables, 72" x 30".
 Miller, hand, No. 2 Pratt & W.
 Miller, pl. No. 2 Kempsmith, b. d.
 Miller, pl., Nos. 3 & 5 Cinc., s. p. d.
 Miller, pl., No. 5B hvy. B. & S., s. p. d.
 Miller, rotary, 40" Ohio tilted, m. d.
 Motors, a. c. & d. c.
 Nut mche., Wat. Far. 3" cold. b. d.

Pickler, 4 arm Mesta, 10' radius.
 Pipe mches., 6" & 8" Oster.
 Pipe mches., 6" & 12" Williams, m. d.
 Planer, 36" x 36" x 8' Gray 3 hds. m. d.
 Pl., 36" x 48" x 12' Det. & H rev. m. d.
 Planer, rotary, 48" Cleveland, m. d.
 Press, cam. No. 69N Bliss, dbl act. inc.
 Press, o. b. i. Bliss, Nos. 18, 19, 20.
 Press, No. 55 Tol. a. s. st. bed 2" x 10 x 19
 Press, No. 57-S Tol. 6" st. bed 32 x 32.
 Presses, Nos. 57, 57 1/2 & 58 1/2 Toledo grd.
 Presses, trimming, United, m. d.
 Press, No. 64 Cons., 17" x 17" str. 4 1/2".
 Press, No. 57 Toledo, 32" x 32" str. 6".
 Presses, hyd. 100 & 200-ton Oilgear.
 Press, No. 96-A Toledo, d. c. 5" str.
 Press, dbl. crank No. 9 Bliss, 2" str.
 Press, No. 6 Bliss dbl. crank, 6" str.
 Press, screw, No. 87 Niagara.
 Press, wheel, 300 ton, motor drive.
 Profiler, 2-spl., No. 14 Pratt & W.
 Punch & s., No. 6 L. & A. 4" thru 4 1/2".
 Punch & s., "C" Clev. 13 1/2" - 4" m. d.
 Punch, mult., No. 5 H. & J. 10".
 Riveters, air, hammer, spinning.
 Rolls, bend., 12" x 1 1/2" H. & J., b. d.
 Roller, thread, Nos. 10, 30, 40 W.-F.
 Saw, No. 21 Higley, cold, 10" rd. m. d.
 Saw, cold, No. 6 Coch.-Bly, s. p. d.
 Saw, cold, 48" Newton, m. d.
 Saws, friction, Nos. 2, 3 & 4 Ryerson.
 Scale, sheet bundling, 2500 lbs.
 Screw mcha. Nos. 52, 53, 55 Nat. A.
 Shaper, vert., Jones 10" stroke, m. d.
 Shapers, 16", 20", 24" & 36" G. & E.
 Shaper, 24" Flather and P. & J.
 Shear, circle No. 3 Bliss, 40" x 20 ga.
 Shear, circle No. 15A Nia, 48" x 16 ga.
 Shear, cir., 1" Newbold, die 14", m. d.
 Shear, o. e. 27" United, 8" x 24" m. d.
 Shear, sq. 16" x 1 1/2" Niag. 0" gap, m. d.
 Shears, alligator, 1 1/2", 2", 3" & 4".
 Shear, allig. No. 6 Mesta, 6" sq. m. d.
 Shear, angle, 6" x 6" x 1" H. & J.
 Shear, bevel, Lennox 4", b. d.
 Shears, foot, 30" and 36" Pexto.
 Shear, sq. No. 196-F Nia 8" x 18 ga.
 Shear, guil. No. 5 H. & J. 4" sq. m. d.
 Shear, rot., 30" Quick., cap. 3-16" b. d.
 Shear, square 8" x 14 ga. Ohl. b. d.
 Shear, sq., 132" x 16 ga. Canton, h. d.
 Slotters, 8" Newton, 8" & 21" Betts.
 Straitener, angle, Newbold, 4" x 4" 1/2".
 Straitener, 1 1/2", 4" rd. Abramson.
 Straitner, No. 2 K. & R., 7-r., cap. 1 1/2".
 Table, rotary, 24"; graduated 360 deg.
 Tapping machine, vertical 4" Baker.
 Testing mch., Brinnell hard., type A.
 Upsetters, 1" to 6".
 Welder, arc, 250 amp Wilson.
 Welder, butt, Tay. Winf., 4" cap.
 Welder, spot, 40 k. w. T.-G., 2 pcs. 4".

USED AND REBUILT MACHINERY

FOR SALE BY

Davis Machinery Co., St. Clair & Washington Sts., Toledo, Ohio

Drill, 3' Bickford radial, s. p. d., t. a.
 Drill, Avey h. s., b. b., 10" overhang.
 Gear hobber, No. 3 Barber-C. (3).
 Grinder, No. 6 Gardner, b. b. disc.
 Grinder, No. 14 Pratt & W. vert. sur.
 Hammer, 4A High Speed riveting.
 Lathe, 16"x8' Springfield, q. c. g., t. & c.
 Lathe, 19"x8' LeBlond h. d., q. c. g.
 Lathe, 14"x6' Hendey q. c. g., tie-bar
 Mill, 2-M Potter & J. horiz. auto.
 Mill, 15" Cincinnati automatic.

Mill, No. 2 Cincinnati univ., compl.
 Oil groover, No. 1 Fischer.
 Press, 15 ton Lucas forcing m. d.
 Press, No. 21 Bliss-Consol. horning.
 Press, No. 24 Consolidated, o. b. l.
 Press, No. 13 Toledo, horning.
 Shear, Wangler rotary bevel, 4" cap.
 Saw, No. 2 Klemm metal cutting.
 Shapers, 20", 24" Steptoe crank, b. g.
 Shears, 15A Niagara circle, 16 ga.
 Tappers, No. 2 & 2X Garvin, vert.

FOR SALE BY

Midwest Equipment Co.,

628-30 W. Lake St., Chicago, Ill.

Air compressor, 9x9, I. R. compl.
 Air comp., 12x10, syn. m. d. compl.
 Grinder, No. 6 Gardner, b. b., 26" discs.
 Grinder, Cluc. No. 1 tool & cutter.
 Grinders, Nos. 1 & 2 Landis, univ.
 Hack saw, Racine 6x6, high speed.
 Lathe, 17x8 Sidney, l. c. g., complete.
 Lathes, 'Cataract', 4 and 3" cap.
 Lathe, 14x6 Sidney, quick ch. gear.
 Lathe, 34x10 Wolcott, q. c. g., comp.

Miller, No. 5 B. & S., plain.
 Miller, No. 1 Kempsmith pl., comp.
 Miller, No. 2 Cinc., univ. complete.
 Miller, Kempsmith No. 3, vert. att.
 Miller, No. 4 Becker, ver., back grd.
 Punch & shear, No. 52 Beloit comb.
 Screw machines No. 0 and No. 2
 Brown & Sharpe, automatic.
 Screw mchs., Nos. 4 & 3 Foster, w. f.
 Shapers, 14", 16", 20" and 24".

Planers, Lathes, Screw Machines, Air Compressors, Woodworking Machines.
 Complete stock of Punch Presses in all sizes. Send for list.

FOR SALE BY

Ott Machinery Sales Co.,

546 Second Ave., Detroit, Mich.

Automatics, Fay 14"x10"; National
 Acme No. 54; New Britain No. 452
 & 652; Pratt & Whitney 1"x15";
 1 1/2" & 1 1/4" Gridley, 4 spindle.
 Boring mills, universal 3" bar; Niles
 5" bar; Nos. 0 & 32 G. & L.
 Drills, Avey, Allen, Leland G. 4-
 spindle No. 2; Foadick 1-spindle
 No. 4, power feed.
 Drill, Mueller, 4' plain radial.
 Elec. h. s. furnace, Hoskins 12x8x16".
 Engraving machines, Keller, No.
 E4, E5, BG482 and BG 724.
 Gear shapers, Fellows Nos. 6, 61, 7
 & 75 h. s.
 Gear generators, Gleason 5" mg. st.
 bevel; Gleason 15" spiral bevel.
 Grinders, B. & S. No. 10 & 32 s. p. d.;
 No. 2 B. & S. universal surface;
 Norton, No. B-81, crank pin; 16x72
 Norton, crank pin; Landis s. c.;
 No. 2 Diamond surface.
 Hammers, Billings & S. 1200 lb. bd.
 drop; Chambersburg 1600 lb.; Erie
 2500 lb.
 Jig borers, No. 2 Pratt & Whitney.
 Lathes, 12"x8' Hendey g. h.; 16"x6'
 Ffather; 16/28x10 Hamilton, cone;

14"x6' & 16"x8' Hendey, cone;
 16"x6' & 8' Hamilton, m. d.; 18"x16'
 Hamilton, geared head; 36"x12'
 Pittsburgh g. h.; 3 1/2"x36" Acme
 turret, geared head.
 Milling mchs., Nos. 12 & 33 Kemp-
 smith Mfg.; No. 4-B Becker vert.;
 No. 2 B. & S. vert.; No. 2 Cin'ti hi-
 power pl.; No. 4 LeBlond pl., cone.
 No. 2 Cleveland universal.
 Thread mills, No. 6 Lees-B. a. m. d.;
 12"x120" Pratt & Whitney.
 Planers, Cincinnati 26x26x6 1-head;
 Cin'ti 48x36x8 2-heads a. m. d.;
 Cin'ti 60x60x20 3-heads, a. m. d.
 Press brake, 12"x13/16" Loy & Nawl.
 Presses, Ferracute P2, 3, 4 & 5; Fer-
 racute DG53 & 54; Bliss, s. s., s. c.
 No. 48, 794 & 514; Toledo, s. s., s. c.
 No. 594; Toledo, s. s., d. c. No. 92B,
 Bliss, s. s., d. c. No. 3 C & D, No.
 4A, No. 5 A & C; Stoll s. s. DC
 No. 16, Bliss, gap, d. c. 25A, & B.
 D; Toledo, gap, d. c. No. 202B &
 F; Bliss, d. c. Toggle No. 405 B &
 407A.
 Slotters, dill, 18" & Sellers 22".
 Upsetters, Acme 1"; Ajax 1 1/2, 2.3 & 4".

Your Inquiries Solicited—Several Thousand Tools Available.

USED AND REBUILT MACHINERY

FOR SALE BY

Geo. M. Bernstein & Co.,

14 S. Clinton St., Chicago, Ill.

Drills, 1, 2, 3 sp. Sipp, h. s., b. b.,
No. 2 m. t., 8" overhang.
Drills, 1, 2, 3, 4 sp. Avey, h. s., b. b.
Drill, 4 sp. Allen, h. s., b. b.
Gear hobber, 12"x8" G. & E.
Gear hobber, No. 12 B-C; gears.
Grinder, No. 1 LeBlond, t. & c.
Grinders, Nos. 2, 3 W. & M. sur. cks.
Lathe, 18"x8" Walcott, q. c. g., t. a.
Lathe, 14"x8" Hendey, q. c. g.
Lathes, No. 0 B. & O. turret collets.
Lathe, 20"x12" Brad. q. c. g., t. a.
Lathe, 24"x10" Boye & Emes, q. c. g.
Miller, No. 2 B. K. & T. vert., s. p. d.
Miller, No. 3 B. & S. pl., arr. m. d.
Miller, No. 1 Kemp. univ., equip.
No. 114 Bealy disc grinder, 30", equipped with 15 h. p., 220-440 volt, 6 cycle,
3 ph. G. E. b. b. mtr., 2 univ. tables & blower. Tex-rope drive. Like new.

Millers, Nos. 2, 3 Kempsmith, plain.
Millers, No. 1 U. S., hand.
Miller, No. 6 Whitney, hand.
Miller, No. 1 Steptoe, hand.
Miller, No. 3 Hendey univ., s. p. d.
Miller, No. 2 Rock'd, univ., s. p. d.
Miller, No. Rock'd, plain, s. p. d.
Millers, No. 2 Garvin duplex.
Presses, No. 20 Bliss, o. b. i., 2" str.
Presses, No. 18 Bliss, o. b. i., 2" str.
Press, Metalwood hyd. forcing.
Saw, 6"x6" Peerless high speed.
Shapers, 16" Smith & Mills, b. g.
Shaper, 17" Averbek, crank.
Shaper, 21" American, b. g.
Shaper, 24" American, b. g.

FOR SALE BY

Scott-Bansbach Machinery Co., 4607 West 20th St., Chicago, Ill.

Air compressor, Daco No. 605P complete, motor and tank.....\$ 85.
Air compressor, Curtis model A, 4 1/2"x4 1/2", 8 to 16 cu. ft.,..... 50.
Automatic screw machines, B. & S., No. 00, 00G, 0, 2 and 2G.....\$250. to 600.
Automatic screw machines, Hi-Speed, B. & S., No. 19 & 00.....\$150 & \$ 750.
Automatic screw machine, Gridley 4 spdl. "F", 4", 1 1/2", 1 1/4" and 2 1/2" \$150 to 750.
Automatic screw machines, Gridley 4 sp., Model G, 9/16" & 3/8".....200 & 500.
Automatic screw machine, Gridley, 4 1/2" single spindle..... 400.
Bolt cutter, 1" Acme, belt drive..... 100.
Drill, New Albany, h. s., motor drive, 110-60-1..... 100.
Drill, Leland Gifford, h. s., b. b., 14" swing, No. 2 M. T..... 150.
Drill, 2 spindle H. & W. h. s., b. b., 16" swing, heavy duty, class R..... 175.
Drill, 3 spdl., Leland-G., 20" swing, h. s., b. b., 12" travel, 26"x64" table..... 500.
Drill 4 spindle, Allen, h. s., b. b. No. 2 Morse taper, 14" swing..... 400.
Drill, 24" Sibley sliding head, b. g. and p. f., No. 4 M. T..... 125.
Drill, radial, C. O., No. 50, wall post type, 2 1/2 foot arm, hand feed..... 125.
Gang slitter, 30" Elgin, 26 gauge, with fingers and cutters..... 125.
Gear cutter, B. & S. No. 3, 26" for spur gears..... 200.
Gear hobber, No. 00 Pfauter, cap. 8"x6"x10 DP..... 100.
Grinder, 6"x32" Norton plain cylindrical, arranged motor drive..... 300.
Grinder, safety, surface, capacity 16" wide, 50" long, 12" high, belt dr..... 500.
Grinder, Gardner No. 4 disc, 23" dia. with press and tables, ball brg... 200.
Grinder, Ransom disc, 26" diameter with press and tables..... 150.
Grinder, Heald, No. 65, cylinder, 16" spindle and fixture..... 350.
Hammer, No. 1 1/2 B. High Speed belt drive, 1/2" capacity..... 60.
Hammer, No. 3 A High Speed belt drive, heavy duty, 5/16" cap..... 150.
Hammer, No. 3 A, H. D., motor dr. with motor, 220, 40, 3, 5/16" cap. 200.
Hammer, No. 4 A, High Speed belt drive, 1/2" cap..... 200.
Hammer, No. 5 A High Speed, motor shelf, 1/2" capacity..... 275.
Hammer, 300 lb. board drop..... 250.
Hammer, Bradley, 30 lb. compact belt drive..... 200.
Lathe, spinning, Bliss, 24" swing, belt drive, no countershaft..... 100.
Lathe 14"x5" Gold Seal, Sebastian all geared head, plain change..... 250.
Lathe, 16"x6" American, quick change, pan bed and chuck..... 400.
Lathe, 16x8 Hendey, q. c., taper attachment and chuck, rebuilt..... 600.
Lathe, 18"x5" Davis, d. b. g., q. c., heavy duty..... 450.
Lathe, 20"x8" Prentice, plain change with 2 chucks..... 150.
Lathe, 24"x13" Dietz, Schumacher & Boye, plain change, with chuck..... 250.
Lathe, 30"x13" H. S. & G. heavy duty, q. c., d. b. g. 16,000 lbs..... 500.
Lathe, sliding gap, 28-48"x13" Harrington, plain change..... 400.

USED AND REBUILT MACHINERY

FOR SALE BY

Mid-West Machine Tool & Supply Co.,

Davenport, Iowa

Boring mill, 42" Bullard.
Boring mill, 10' Pond.
Grinder, No. 10 B. & S. ext.
Hobbers, No. 3 B & C.
Lathe, No. 9 LeBlond multi-cut.

Lathe, 18" Libby H. D., turret.
Millers, Nos. 9-Y Brown & S.
Radial drill, 4' American sensitive.
Turret lathe, Nos. 2 & 6 Warner & S.

FOR SALE BY

E. L. Klauber Machinery Co.,

320-22 S. Third St., St. Louis, Mo.

Collets, for Gridley 2 1/2" (200).
Furnace, melting U. S. 500 lbs.
Grinder, vert. surface 12" P. & W.
Grinder, disc, 20" Ransom.
Grinding wheels, 14x2 1/2x5" holes (50)

Lathe, 19"x18" Champion s. q. c. g.
Lathe, 22"x12" Lodge & S., q. c. g.
Miller, No. 4 Cincinnati plain.
Planers, 20"x20"x4' & 30"x30"x8'.
Rolls, 36"x4" 10 gauge, belt.

FOR SALE BY

Chas. E. Wain Machinery Sales,

Detroit, Mich.

7800 Mack Ave.,

Drill, No. 13 P. & W. multiple.
Drill, 42" Barnes, t. a.
Drill, 20" Minster, h. d., 2" cap.
Drill, No. 1 Barnes horizontal.
Drill, 4" 2-spindle L. & G.

Grinder, No. 1 Cincinnati t. & c.
Grinder, No. 60 Heald internal.
Grinder, No. 1 Production surface.
Hand screw, No. 4 W. & S.
Hand screw, No. 2-5 Foster.

FOR SALE BY

Behlen Machinery Co.,

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Bench centers, Sundstrand 9x48.
Bor. mill, No. 32 G. & L. 3 1/2 bar, m. d.
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Drills, Nos. 2 and 2 Aveys.
Drills, No. 2-B Edlund.

Gun drills, P. W. several.
Gear shapers, Fellows h. s., m. d.
Grinder, Heald rot. sur., 8" mag. ch. k.
Press, 4'x4' Lourie hyd., motor dr.
Sleeve forming & lock seam., Stolp.

Partial Listing Only. Money Back Guarantee.

FOR SALE BY

Wigglesworth Machinery Company

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Brake, 10' 6"-3/16" ga. Geo. Ohl.
Boring mill, 24" Bullard, New Era.
Grinder, No. 2 Cincinnati, centerless.
Hammer, No. 6B Naxel.
Lathe, 18"x16" Reed q. c. g.

Lathe, 42"x16" Flather, q. c. g.
Miller, No. 2-B Brown & Sharpe.
Measuring machine, 36" Pratt & W.
Thread miller, 6"x80" Pratt & W.
Planer, 30"x30"x26" Gray.

FOR SALE BY

James W. George,

1123 Beaufait Ave., Detroit, Mich.

Drills, 4' Morris radial, m. d.
Drills, 21" and 24" Cincinnati.
Drills, 1, 2, 3, 6 spindles.
Grinder, No. 11 Brown & Sharpe.
Grinder, No. 70 Heald.
Lathes, 18" and 18" Springfield.
Lathe, 18"x16" Hamilton, g. h.
Miller, No. 2 Milwaukee universal.

Miller, No. 2 Milwaukee plain.
Miller, No. 4-B Brown & Sharpe.
Miller, No. 3 Brown & Sharpe vert.
Planer, 36"x36"x12" Cincinnati.
Press, 50 ton Henry & Wright.
Shaper, 24" Gould & Eberhardt, m. d.
Shaper, 16" Gould & Eberhardt, m. d.
Thread miller, 12"x120" P. & W.

USED AND REBUILT MACHINERY

FOR SALE BY

The Jones Machine Tool Co.,

Front & Pike Sts., Cincinnati, Ohio

LATHES

- 12"x8' Sebastian, geared head.
- 18"x6' L. & S. sel. geared head.
- 18"x10' L. & S. sel. grd. head, (3).
- 20"x10' American cone head q. c.
- 24"x12' Lodge & Shipley, q. c.
- 32"x12' Boye & E., cone head q. c.
- 36"x16' Lodge & S., q. c., m. d.

PRESSES

- 50 O. B. I. presses—all sizes.
- No. 4 & 5 Cons. & R. & K. (6).
- American Can, plain & b. g.
- No. 5 L. & J., o. b. i., b. grd.
- No. 57 Toledo 18" bet. housing.
- No. 88 Toledo, s. crank.
- No. 6 Verdin o. back inc., b. geared with 3 h. p. motor drive.

MISCELLANEOUS

- Boring mill, 36" Bullard vertical.

- Brake, 10' Bertsch press brake, 3/16
- Brake, Chicago 14 ga., hand power.
- Brake, Chicago 1/2", leaf brake, m. d.
- Square shears, 37" Toledo 16 ga.;
- 54" Kutscheid, foot power.
- Gear cutters, Nos. 3, 4, 13 H. & S.
- Bolt cutter, dbl. spindle 1 1/2" Landis.
- Radial, drill, 3' American-Bickford,
- Keyseater, No. 2 Mitts & Merrill.
- Grinders, No. 60 & 70 Heald.
- 12x24 Diamond surface.
- Lathe, turret, No. 6 Foster pwr. fd.
- Milling mchs., Nos. 2, 3 & 4 Cin'ti.
- No. 3 LeBlond, universal.
- Rolls, stght., 54" H. & J., m. d.
- Tappers, No. 1 & 2X Garvin.
- Welder, 20 k. w. National, 36" arms.
- 100 k. w. Gibb, 24" arms.
- 35 k. w. Federal, 42" arms.

JONES-BUYS-SELLS-TRADES-WRITE-US

FOR SALE BY

Belyea Company, Inc.,

150 W. 18th St., New York, N. Y.

D. C. MOTORS

Adj. Speed—230 Volt

H. P.	TYPE	SPEED
1-1500	West.	470/600
1-300	Cr. Wh.	200/400
1-250	El. Dy.	300/900
3-120	G. E.	300/750
1-100	West.	365/600
3-80	Diehl	540/1100
1-60	G. E.	400/1050
2-50	West.	225/600
1-40	West.	300/900
1-35	West.	500/1500
1-35	Cr. Wh.	800/1600
1-25	West.	400/1200
3-25	West.	650/2200
1-20	West.	650/1300
2-20	West.	375/1500
20-20	G. E.	650/1950
1-20	West.	500/1500
1-20	G. E.	500/1500
2-15	El. Dy.	300/900
1-15	West.	600/1200
6-15	West.	400/1600
1-10/14	El. Dy.	300/1200
30-10	West.	500/1500
20-10	G. E.	600/1800

MOTOR GEN. SETS.

- 500 k. w. G. E., D.C. Gen. 250/275 v. comp'd. inter pole, 720 r. p. m., coupled to 700 h. p. G. E. Type AT1, Synch. Motor, 3 ph., 60 cy., 720 r. p. m., 2200/440 v.
- 175 k. w. G. E., D. C. Gen. 275 v. comp'd. interpole, dir. conn. to 290 h.p. G. E. Synch. Motor, 2300/440 v., 3 ph., 60 cy., 720 r. p. m.

A. C. MOTORS

Synch. Type

H. P.	TYPE	VOLTS	SPEED
1-2550	G. E.	2300/4150	450
1-675	Al. Ch.	2200/550	900
1-600	G. E.	2200/550	257
1-240	Al. Ch.	2200/440	720
1-125	West.	2300	900
1-50	G. E.	440/220	1200
1-35	G. E.	440/220	1200

SLIP RING

H. P.	TYPE	VOLTS	SPEED
1-1200	West.	2200	360
1-600	G. E.	2300/550	257
1-600	G. E.	2200/440	705
1-450/360	West.	2200	875/700
1-400	West.	2300	514
1-400	West.	550	505
1-300	G. E.	550	575
1-250	F. Morse	2200	1300
1-250	West.	2300/440	700
2-200	West.	220/440	900
1-200	G. E.	220/440	900
1-150	G. E.	440	1750

SQUIRREL CAGE TYPE

H. P.	TYPE	VOLTS	SPEED
1-300	Cr. Wh.	2300/220	580
1-250	West.	2300/440	580
1-150	G. E.	220/440	900
1-150	West.	220/440	720
1-150	West.	220/440	580

ENGINE GEN. SETS.

- 1-400 k. v. a. Cr. Wh., 240 v. 3 ph., 60 cy., 120 r. p. m. to Hamilton Corliss Engine.
- 1-180 k. w. G. E. Type ATB, 2300 v. 3 ph. 600 r. p. m., 60 cy. Geared to Delaval Steam Turbine.

Above is Only Partial Listing. We Specialize in All Electrical Equipment, Motors, Pumps, Generators.

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Ideal Machinery Company, - - - **Plainville, Conn.**

TOGGLE DRAWING PRESS

No. 3½ B Bliss toggle drawing press, weight 20,000 pounds, strokes 8 and 12", distance between uprights 26", strokes per minute 61, clutch operated.
Price \$3,000.00, f. o. b. cars.

FOR SALE BY

Surplus Material & Mehry. Co., 8735 Kercheval Ave., Detroit, Mich.

Drillers, 2 Detroit, 5 spindle horiz. Grinder, No. 24 Gardner continuous feed, disc. Grinder, No. 2 B. & S. universal. Grinder, No. 2 Cincinnati plain.	Mill, No. 0 G. & L. hor. 3½" cap. m. d. Mill, No. 3C Becker vert., motor dr. Mill, No. 3 B. & S. vert., s. p. d. Mill, 24" Bullard, vertical turret. Pipe threader, Landis, 4" mtr. dr.
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FOR SALE BY

Wm. W. Meyer Blower Co.

1045 W. Washington Blvd., - - - Chicago, Ill.

BLOWERS—FANS—EXHAUSTERS.

Connersville—Roots—Wilbraham Green—positive pressure rotary blowers.
 Spencer—General Electric—Eclipse—centrifugal motor driven blowers.
 Dust Exhausters—Disc Fans—Steel Plate and Ventilating Blowers.
 New—Rebuilt—Used.

FOR SALE BY

Ohio Machinery & Supply Co., 433 E. Pearl St., Cincinnati, Ohio

Arbor presses, various sizes. Boring mill, R. & K. horiz. 2½" bar. Drill, 24" Superior tapping attach. Hack saw, Racine 6x6 cap. Lathe, 14x8 Standard q, c. cone dr. Lathe, 15" x6" Von Wyck cone drive.	Lathes, 14"x5' Sebastian grd. hd. (2). Lathe, 18x6 Boye E. q. c. tool room. Miller, Knight vertical. Miller, No. 2 B. & S. plain. Shaper, Potter & Johnston 15". Shaper, Steptoe 16" cone drive.
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Sheet Metal Machinery various kinds—We buy sell or exchange.

FOR SALE BY

Thomas H. Craig, Jr., - - - 41 Mountfort St., Bridgeport, Conn.

Automatics, No. 0 Brown & Sharpe full, (5).....	each \$ 200.
Header, foundry, No. 3 Waterbury-Farrel, d. s. o. d.....	250.
Header, foundry, No. 4 Waterbury-Farrel, s. s. o. d.....	1,000.
Miller, No. 1½ B Brown & Sharpe plain.....	275.
Planer, 42"x42"x10' Woodward, two head, like new.....	1,500.
Tapper, ¾" National bent tap.....	350.
Wire straightener, ½" Shuster, with cut-off.....	275.

FOR SALE BY

United Machinery & Supply Co., 1241 Walton Ave., St. Louis, Mo.

Balancing machine, dynamic. Brake, 10' x½" D. & K., motor drive. Brake, box and pan, D. & K. 5'. Brake, press, 10' 3/8" K. & D., m. d. Brake, press, 4' 10 ga. D. & K., m. d. Brake, press, 10' x3/16" Ohls. Drill, multiple, 12' long.	Grinder, flexible shaft, ½ h. p. Lathe, Lehman 20x11, s. p. d. Press, No. 61 Bliss, 4" stroke. Rolls, slip, 4' x10 ga. initial. Shear, 10' 10 ga. D. & K. motor drive under drive. Shear, throatless, Lennox ½", m. d.
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USED AND REBUILT MACHINERY

FOR SALE BY

The O'Brien Machinery Co.,

Boring mill, 42" Bullard vert. 2 hds.
Column facer, 14" Espen-Lucas.
Grinder, No. 55 Heald.
Grinder, No. 2 Van Norman Piston.
Grinder, 10"x52" Landis, self contained, plain.
Hammer, 800 lb. Erie, steam forging.
Hammer, 1100 lb. NBP, steam forg.
Hammer, 2000 lb. Chambersburg double frame, steam.
Keyseater, No. 2 Baker, 3" cap., belt drive.
Lathe, 27"x12' L. & S. geared head.
Lathes, 18"x8' Bradford, mtr. dr.

113 N. Third St., Philadelphia, Pa.

Lathe, 24"-40"x22" McCabe, belt.
Lathe, 66"x38' Bement, motor drive.
Miller, No. 3 K. & T., univ. table 55"x15", range 34"x12"x19".
Miller, No. 4 Cincinnati universal, belt driven, table 57"x14".
Miller, No. 4 Cincinnati vertical, single pulley drive.
Pipe machines, 2, 4, 6, 8 and 12" belt and motor drive.
Punch, beam, type IG Clev., 24" bms.
Punch, No. 3 Southwark 4x4", mtr.
Shapers, 14, 16, 20 & 24" various makes
Shear, No. 5 H. & J. s. e., 24" blades.

FOR SALE BY

McDonald Machinery Co.,

Bolt mchs., Landis & Acme 14".
Boring mill, Lucas No. 21 horizontal.
Boring mills, Barrett 5" bar horiz.
Drills, Cin-Bickford 3' & 3 1/2' radials.
Gear, cutter, G. & E. 60" m. d.
Gear hobber, G. & E. 24".
Grinders, B. & S. No. 2 surf. & univ.
Grinder, P. & W. 14" vert. surf.
Grinder, B. & S. No. 13 mtr. dr.
Ironworkers, Buffalo No. 0 univ.
Keyseaters, M. & M. No. 2.
Lathes, F. & M. 60"x26' bed; Hendey 14"x6', q. c. g.; 50 others in stock.
Milling machines, B. & S. No. 5, vert.
Milling mches., B. & S. No. 14 Cinc. No. 14, Hendey No. 1-B, Kemp. No. 3; Ohio No. 39; vertical slott.

1535 N. Broadway, St. Louis, Mo.

attach., all universal; Kemp. No. 1, LeBlond No. 3-H; Brown & S. No. 3-B, s. p. d., Brown & Sharpe No. 3, all plain, Cincinnati 12" Mfg.; Milw. No. 3-B & No. 1-A s. p. d. plain; Cin. No. 3-S pl., s. p. d. Punch press, d. c. grd., 79" between uprights, 5" str., wt. 38,000 lbs. Toledo No. 56 s. s. grd., 14" str. Shapers, G. & E. S. & M., Cin., Ohio, American, Steptoe, Queen City, 12", 16", 18", 20", 24" and 36"; S. & M. 28", s. p. d.; Cin. 24" m. d. g. b. Square shears, Niag. 62" No. 18 ga. Turret lathes, W. & S. No. 2A univ. Turret lathes, Libby 18" geared head universal, Gisholt univ.

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

1211-1223 Hadley Street,

St. Louis, Mo.

Air compressor, 12"x10' Chgo., belted
Bar shear, 5"x4".
Boltthreaders, 1" & 1 1/2" Landis.
Boring mills, 36", 42", 60" & 72".
Bulldozers, No. 3, No. 4 and No. 8.
Drill, 1-spindle Avey.
Drill, 3' Mueller radial.
Drill, 5' Drees radial.
Drill, 6' arm American radial.
Grinder, 12"x60" Landis universal.
Grinder, 12"x36" Thompson univ.
Grinder, No. 60 Heald cylinder.
Lathe, 16"x7' P. & W., geared head.
Lathe, 16"x9' Lehman.
Lathe, 27"x12' American, q. c. g.
Lathe, 34"x30' Fifeid.
Lathe, 36"x26' American.
Lathe, 36"x27' American quick ch.
Lathe, 28"x16' Lodge & Shipley.
Lathe, 36"x8' Walcott.

Lathe, 16"x7' and 9' Lehman.
Lathe, 29"x14' American, q. c. g.
Lathe, 18"x12' South Bend.
Miller, No. 2 Brown & Sharpe, pl.
Miller, Ingersoll slab, 27"x23"x14' bed, 4 heads, motor drive.
Pipe machines, 4", 8", 12" & 16".
Planer, 60"x45"x10' Gray.
Press, 35 Swaine.
Press, 82C Toledo, geared.
Press, No. 59 Niagara grd. tie rod.
Punch, No. 14 W. W., 12" throat.
Sand slinger, Beardsley & Piper.
Shapers, 12, 16, 18, 20, 24 and 26".
Shear, circle, No. 310 Niag. 48" thr.
Turret lathes, No. 3A W. & S., 8" hole, motor drive; No. 2A W. S.; 21 & 26" Steidle; Gisholt 36".
Wheel presses, 48" & 70" hydraulic.

High Grade Machine Tools

Lathes

42"x34" American Grd. Hd., S. P. D.
 42"x34" Putnam Grd. Hd., S. P. D.
 42"x30" Putnam Grd. Hd., S. P. D.
 36"x18" Amer. Grd. Hd. S. P. D. 2 car.
 24"x24" L. & S. Pat. Grd. Hd. S. P. D.
 24"x16" American Grd. Hd. S. P. D.
 18"x6" Lodge & S. Grd. Hd. S. P. D.
 18"x10" Lodge & S. S. P. D. Grd. Hd.
 24"x10" Bradford Geared Head Taper,
 Arranged Motor Drive.
 28"x48"x10" Harrington, Slid. Bed.
 30"x18" American Cone High Duty.
 20"x10" American Grd. Hd. S. P. D.
 36"x16" Lodge & S. Sel. Grd. Hd.
 30"x12" L. & S. Sel. Grd. Hd., M. D.
 20"x8" Am. Grd. Hd., M. D., late.
 20-30"x7" Monarch Helical G. H. Gap

Grinders

18"x96" Norton Grinder.
 16"x48" Landis Crankshaft.
 16"x48" & 72" Landis Crankshaft.
 No. 2 Diamond Surface.
 Type A Production Abrasive Finishing
 Nos. 50, 55, 60, 65 and 70 Heads.
 6"x18" Landis Plain, Self Contained.
 10"x52" Landis Plain, Self Con.
 Rivett Internal Grinder.
 No. 2 Brown & Sharpe Surface.

Gear Cutters

No. 1 Brown & Sharpe Gear Tester.
 No. 615 Fellows.
 36BM Gould & E. Gear Rougher.
 No. 3, 26" Brown & S. Gear Cutter.
 No. 4, 48" Brown & Sharpe.
 No. 5-40" Newark Hobber.
 Nos. 1, 2, 4 Adams Farwell Gear Hb.
 18-H Gould & Eberhardt Hobber.
 6", 11", 18" Gleason Gear Generators.

Bolt and Pipe Threaders

2½" Bolt Landis, Lead Screw, Cone.
 6" Landis Pipe Machine, M. D.
 2" Landis Pipe Machine, Cone.
 1½" Landis Spl.-Sp., Grd. Hd. m. d.
 2" Landis Double-Spindle.

Boring Mills

No. 35 Landis, Floor type.
 14" Betts, Cone Drive.
 72" Betts Cone Drive.
 60" Niles Boring Mill, 2 heads.

Milling Machines

No. 2 & 3 Kemp Smith Plain, M. D.
 No. 24 Brown & Sharpe.
 No. 3 LeBlond H. D. Plain.
 No. 3 Kemp Smith Universal.
 No. 3 Ryerson S. P. D., Universal.
 No. 2 Rockford Universal, complete.
 No. 4 Cincinnati H. P. Pl., S. P. D.
 No. 3 Cincinnati Pl. Hi-Pwr., S. P. D.
 No. 3-B Milwaukee Pl., Dbl. O. A.
 Nos. 3; 5-B; 6 Becker Vertical.
 No. 3 Cincinnati Vert. H. P., S. P. D.
 5" Pratt & Whitney Automatic.
 18" Cincinnati Plain Mfg. Miller.
 Briggs Manufacturing Miller.
 No. 7-H Becker Lincoln type.
 No. 1 Knight Miller and Driller.
 4½"x12 Pratt & Whitney Thread Miller
 No. 3 & 3-E Lees-B. Thread Millers.

Planers

48"x48"x10 Cleveland Openside, 3 hds.,
 Motor Drive.
 30"x30"x8" Cleveland, Openside.
 30"x36"x10" Cincinnati.
 24"x24"x8" Gray Planer.

Radial and Upright Drills

24" Cincinnati Bickford Upright, tap.
 2½, 3, 3½, 6" Cincinnati, S. P. D.
 3, 3½, 4 American Trip. Pur. S. P. D.
 3" Bickford Plain, S. P. D.
 No. 2 Colburn Mfg. H. D. 2-spindle.
 No. 40 Natco Straight Line Multi.

Shapers

16" American S. P. D. Univ. Table.
 28" Gould & Eberhardt High Duty.
 16", 20", 24" G. & E., mtr. dr. thr. g.b.
 16", 20" and 24" G. & E., cone drive.

Miscellaneous

No. 3-B LaPointe Broaching Mche.
 80 lb. Bradley Cushion Helve Hammer
 High Speed Riveting Hammers.
 Nos. 1 & 3 Baker Keyseating Mches.
 No. 2 Mitts & Merrill Keyseater.
 Nos. 1 & 2 Davis Keyseaters.
 V-18 Amer. Vert. Broaching Mche.
 15, 30 & 50 Ton Lucas Forcing Pr.
 No. 50 Toledo Arch Press, 10" stroke.
 96-A Toledo Dble. Cr. Straight Side.
 No. 2 L. & A. Punch & Shear, M. D.
 No. 1 & 2-X Garvin Tapping Mches.
 No. 4 W. & S. Univ. Turret Lathe.

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Boring Machines (Hor.)

No. 0 Giddings & Lewis.
No. 3½ Universal, 3½" bar.
No. 32 Lucas, 3½" bar.

Boring Mills (Vertical)

24" Bullard, "New Era".
32" & 42" King.
36" & 42" Bullard "New Era"
61" Bullard Maxi-Mill.
62" Colburn, Heavy Duty.
72" Colburn, m. d.
72" King.
10' Niles.

Drills (Ball Bearing)

No. 1 Leland-Gifford.
1, 2, 3, 4, 6 Spindle L-G.
1, 2, 6 Spindle Henry & Wright.
4 Spindle Sigourney.

Drills (Mfg.)

Boley Multiple Drillers.
Nos. 2 & 14 Colburn, 1, 2, 4 spindle.
24" Cinn.-Bick., slid. head.
No. D-4 Colburn.

Drills (Radial)

3' Western, timken bearing, m. d.
3' American.
4' Cinn.-Bickford, m. d.
5' American, full universal.

Gear Cutters

Nos. 3 & 12 Barber-Colman.
Nos. 9-H & 15-H G. & E. hob.
Nos. 6, 65, 61, 612 Fellows.
6" & 18" Gleason bevel gear.
37" Gleason bevel planer.

Grinders (Plain)

Nos. 10, 11, 12 B. & S.
10" x 24" 36" 50" Norton.
10" x 72" Norton.
10" x 36", 52" Landis.
14" x 36", 50", 72" Norton.
18" x 96" Norton, m. d.
20" x 120", 168" Landis, m. d.

Grinders (Univ.)

No. 2 & No. 2½ Bath universal.
No. 4 Landis.

Grinders (Misc.)

No. 70 Heald, Internal
No. 2 Brown & Sharpe, surface.
No. 10 Blanchard, surf., m. d.
No. 16-26" Blanchard, surface.
No. 3 Abrasive, surface.
14" x 36" 22" x 7" P. & W. surface.
15" x 17" x 72" Norton, o. s., surf.
36" x 84" Diamond, hyd. face.

Lathes (Screw Cutting)

8" Rivett Bench, rel. attachment.
13" x 6" LeBlond, s. p. d.
16"-18½" x 6" L. & S. sel. g. h.
16"-18½" x 8", 10" L. & S. sel. g. h.
18"-20½" x 8" L. & S. sel. g. h.

20"-22½" x 8", 12" L. & S. sel. g. h.
24"-27½" x 12", L. & S. sel. g. h.
25" x 24" LeBlond geared head.
27"-30" x 18" L. & S. sel. g. h.
36"-40½" x 14" L. & S. sel. g. h.
36" x 18", 30" Rahn-Larmon.
66" x 21", 36" Putnam t.g., m. d.

Millers (Thread)

4½" x 12", 6" x 48", 6" x 90" P. & W.
No. 4 Lees-Bradner.

Millers (Plain)

Nos. 0, 1, 2, 3-B, 4-B, 5-B, B. & S.
Nos. 1-B and 2-B Milwaukee.
Nos. 2 & 3 Cinn. h. p., s. p. d.
No. 3-B, No. 4-B Milw., s. p. d.
Nos. 4 & 5 Cinn. h. p., s. p. d.

Millers (Univ.)

No. 2A Brown & Sharpe.
No. 3-GS Hendey, s. p. d.
Nos. 3, 4 Cinn. h. p., s. p. d.

Millers (Vert.)

No. 1½ Milwaukee.
No. 3 Cinn. h. p., motor-in-base.
No. 4 Cincinnati, h. p., s. p. d.
No. 5 Brown & Sharpe.

Planers

22" x 22" x 5' Gray.
24" x 24" x 12' Gray.
30" x 30" x 6", 18" Cincinnati.
36" x 36" x 8", 16" Cincinnati.
36" x 36" x 10' Gray, rev. m. d.
36" x 36" x 24" & 48" x 48" x 10' Gray.
48" x 48" x 14" Liberty, o. s.
56" x 56" x 32" Cincinnati.
72" x 72" x 12" Cincinnati.

Presses

No. 20 Bliss, o. b. i.
No. 4 Rockford, b. g.
No. 95-E Toledo, double crank.
No. 96-F Toledo, double crank.
No. 106 Bliss, gap.
No. 96-I Toledo, double crank.
H. & W. 50-ton dieing machine.

Shapers

16" Smith & Mills.
26" American, s. p. d.
20" Gould & Eberhardt, late type.
24" American, s. p. d.
24" Gould & Eberhardt, s. p. d.
24" Rockford.

Turret Lathes

Nos. 3A W. & S. univ. turret.
18"-3-9/16" Libby, motor drive.
26"-74" Libby, inter. turret.
No. 4-L Gisholt, 9½ h. s.

Miscellaneous

10' Kling bending roll.
10' Ohl brake.
Cleveland "C" punch & shear.
No. 362 Niagara square shear.

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No. 4 LEBLOND UNIV. MILLING MACHINE

Flanged spindle nose, vertical attachment, universal dividing head, swivel vise, lots of arbors and cutters. Excellent condition.

16" GOULD & E. HEAVY DUTY SHAPER. With vise. Old machine.

24" CINCINNATI HEAVY DUTY SHAPER

Square way type, with vise. Motor drive through gear box. Good cond.

28"x16" SCHUMACHER & BOYE LATHE. Five-step cone drive.

21"x10" LEBLOND HEAVY DUTY GEARED HEAD LATHE

Large and small face plates. Steady r., follow r., taper attach., chuck.

2—21"x10" LEBLOND ENGINE LATHES

42" BULLARD NEW ERA VERTICAL TURRET LATHE.

Ser. 12,787. 4-jaw chuck, tbl., lubr. & tap. turn. att., AC mtr. Like new.

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16 Speeds. Good condition.

30"x16" LODGE & DAVIS LATHE

No. 1-A WARNER & SWASEY. UNIVERSAL TURRET LATHE

Serial 243419. Both bar and chucking equipment AC.

60" COLBURN TWO HEAD BOKING MILL. LIKE NEW

Power rapid traverse in all directions, all geared feeds.

26" TYPE "C" LIBBY TURRET LATHE

74" hole in spindle, 4-jaw chuck, chucking equipment, a. c. motor drive.

24" STEINLE TURRET LATHE

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Single pulley drive, about 30" between center. Good condition.

2—No. 37 GLEASON AUTOMATIC BEVEL GEAR PLANERS

Serial 8060. Complete equipment for rough. & finish., a. c. motor drive.

2—24" GLEASON AUTOMATIC BEVEL GEAR PLANERS

Serial 4716. Complete equipment for rough & finishing, m. d. with mtr.

36" NEWARK SPUR GEAR CUTTER

3—60" NEWARK SPUR GEAR CUTTERS

72" GOULD & EBERHARDT GEAR CUTTER

60" GOULD & EBERHARDT GEAR CUTTER

3—No. 60"x20" CINCINNATI GEAR CUTTERS. A. C. motor drive.

42" FAWCUS DOUBLE HELICAL GEAR HOBBER

Cap. 48"x15" face, pitch range 8 to 3 diam. pitch. Weight 12000 lbs.

96" FAWCUS GEAR HOBBER, 30" face.

34" LANDIS FLOORTYPE HOR. MILL. 6'x8" floor plate. LIKE NEW.

6" BICKFORD RADIAL DRILL. Gear box drive.

FAWCUS GEAR RUNNING IN MACHINE

2—120" FAWCUS DOUBLE HELICAL GEAR HOBBERS

14"x6" HENDEY LATHE. Quick change, taper attachment.

250 TON HORIZONTAL HYDRAULIC PRESS. 12" ram.

5" CINCINNATI BICKFORD RADIAL DRILL. Gear box drive.

36"x22" LEBLOND Hvy. DUTY GRD. HEAD LATHE. 16 speed hd.

120"x20"x32" GOULD & EBERHARDT GEAR CUTTER. 84" table.

No. 7-A 84"x24" CINC. GEAR CUTTER. A. C. mtr. dr. with 15 h. p. mtr.

120" FAWCUS DOUBLE HELICAL GEAR HOBBER.

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Materials, Small Tools, Appliances, Office Equipment.

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- 8-95"-120" FAWCUS DOUBLE HELICAL GEAR HOBBER.
Max. cap. 108x40" face. Pitch range 4 diam. pitch to 1½ diam. pitch.
Weight 45000 lbs. each. Worm, helical and herringbone.
- 40"x40"x12' GRAY WIDENED PATTERN PLANER
2 rail heads and 1 side head. LIKE NEW.
- 30"x30" LIBERTY PLANER. 1 rail hd. & 1 side hd. AC m. d., with mtr.
No. 6 A MITTS & MERRILL KEYSEATER
- No. 3 MITTS & MERRILL KEYSEATER. Serial 132464.
- 14' FAWCUS DOUBLE HELICAL GEAR HOBBER
90" table., AC motor drive, with 35 H. P. motor. Cap. 15'x60" face,
pitch range from 3 diametral to 1½.
- 27"x18" PRENTICE GEARED HEAD LATHE
- 30"x30"x12' DETRICK & HARVEY OPENSIDE PLANER
1 rail head and 1 side head.
- MORTON DRAW CUTSLOTTER. 10' span, 54" un. rail, 10'x12' floor pl.
- 20"x120" LANDIS PL. SELF CONTAINED CYL. GRINDER
Serial 8721. Lot of equipment. Excellent condition.
- INGERSOLL SLAB MILLER. Inclined rail, 24"x10' table. Old machine.
- 96"x60"x30' DETRICK & H. OPENSIDE PLANER. 2 rail hds., 1 s. hd.
- 72"x60"x24' GRAY PLANER. 2 rail heads, 2 side heads.
- 48"x10' LODGE & SHIPLEY LATHE. Internal geared, faceplate drive.
- 6' PRENTICE RADIAL DRILL.
- 6' CINCINNATI BICKFORD SUPER-SERVICE RADIAL DRILL.
Motor on arm, 15" column. LIKE NEW.
- 10'-16' BETTS TWO HD. BORING MILL. Mtr. dr. for rais. & lower arm.
- 6' POND SQUARE COLUMN RAD. DRILL. Ser. 80636. Motor on arm.
- 9"x9" PEERLESS HACK SAW.
- 5' BAR DETRICK & H. FLOOR TYPE BOR. MILL. 9"x12' floor plate.
- 24' FAWCUS HERRINGBONE GEAR PLANER. Capacity 24'x42".
- 6½' BAR NILES FLOOR TYPE BORING MILL.
Late type, 15'x15' floor plate. Several boring bars.
- FAWCUS HERRINGBONE PINION PLANER.
- 12' BETTS BOR. MILL. 10' tbl. 60" under rail, gd. fds. & pwr. rapid trav.
- 8' BETTS BORING MILL. 2 rail heads, 78" table.
- 84" COLBURN VERTICAL BORING MILL
Power rapid trav. in all direc. latest type, AC m. d., with mtr., like new.
- No. 2 BAKER KEYSEATER.
- OLIVER DRILL GRINDER. Motor in base, 220 v., 3 phase, 60 cycle.
- No. 3 BROWN & SHARPE UNIVERSAL GRINDER, complete.
- No. 2 BROWN & SHARPE UNIVERSAL MILLING MACHINE.
- No. 4G LEBLOND UNIVERSAL MILLING MACHINE
Latest type, hvy. duty, sgl. pulley dr. with univ. divid. hds. & vert. att.
- No. 2 KEMPSMITH UNIVERSAL MILLING MACHINE.
- 17x8 LERLOND GD. HEAD LATHE. AC mtr. in base, taper att., chuck.
- 16"x8' ROCKFORD LATHE. Quick change. Taper attachment.
- 2-PFAUTER HOB GRINDERS.

There is also in the plant a room 60'x15', lined with hobs, cutters, gauges and small tools. A complete power generating outfit, a forge shop, pattern shop and many new high carbon steel bars.

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Vertical & Horizontal Boring Mills

- 5' bar Detrick & Harvey floor type.
- 3' bar Lucas, Table type.
- 3 1/4' bar Detrick & H. floor type.
- 42' Cinbolt, Bullard, & Niles, 2 heads on rail. All P. R. T. motor drive.
- 48' Colburn 2 heads P. R. T., m. d.
- 10' N. B. P. heavy, grd. feeds, m. dr.
- 36' Bullard vertical turret, motor dr.
- 36-44 Pratt & W. vert. turret, m. dr.

Lathes

- 14"x6' Hendey, (3).
- 18"x10' American, gd. hd., motor dr.
- 16"x8' American.
- 18"x8' American, (3).
- 20"x8' American, gd. hd. motor dr.
- 36"x26' Bridgeford gd. hd., motor dr.
- 46"x28' H. S. & G. gd. hd., mtr. dr.
- 24-48x14' McCabe gap gd. hd., m.
- 24-48x18' McCabe gap, belt drive.
- 33"x12' L. & S. heavy q. c. g., belt.
- 36"x22' New Haven late q. c. g., belt.

Drills

- 1 & 2 spindle Aveymatics.
- 1, 2, 3, 4 spindle High Speed. Allen and Leland & Gifford.
- 24' & 30' sliding head, tapping, m. d. Snyder and Aurora, single spindle.
- 3' Cincinnati-Bickford plain radial.
- 4' Niles Universal radial.
- 5' Cincinnati-Bickford plain radial.
- 6' Amer. Tri. Purp. plain rad., m. d.
- 6' N. B. P. right line radial, motor dr.

Milling Machines

- No. 2A Brown & S. Universal, (2).
- No. 3A Brown & S. Universal, (2).
- No. 2 Cincinnati vertical.
- 24' Cincinnati duplex, late type.
- No. 3-B Milwaukee pl., late type (2).
- No. 25 Becker Plain, (3).
- No. 2 Kempenith Maximiller, m. d.
- No. 3 Hendey plain, cone drive.
- No. 3 Cincinnati plain Hi-Pr. gd. hd.
- No. 2 Knight vert. mil. & drill., s. p. d.

Shapers & Planers

- 72"x72"x18' D. & H. motor drive.
- 10' Pratt & Whitney vertical.
- 16' & 20' Smith & Mills, back geared.
- 20' G. & E. High Duty gear box m. d.
- 24' G. & E. High Duty back gd. cone.
- 24' American Heavy gear box, m. d.

Grinders

- No. 2 Cincinnati centerless, Tex rope dr., Hydraulic truing device, A. C. motor drive, with motor (2).
- 16"x48' Landis crankshaft self con.
- No. 65 Heald cylinder, Like new.
- 10"x24' Landis self contained.
- 14' Pratt & Whitney Vert. Surface.
- No. 3 Abrasive Surface.
- No. 19, 53 Bealy vertical disc, belt.

Presses

- No. 77 1/2 Bliss st. side, double grd.
- No. 92 1/2 C Toledo, st. side, d. c. gd.
- No. 203 D Toledo, st. s., d. c., flywheel
- No. 74 Bliss-Cons. gap frame flywheel.
- No. 72 Cons. gap frame, geared (2).
- No. 5 V. & O. open back inc. fly.
- No. 8 Perkins knuckle joint embossing.

Brakes

- 13'x3/16' Geo. Ohl brake, belt.
- 10'x10 ga. Loy & Nawrath, brake.
- 10'x1/4' Loy & Nawrath brake, m. d.

Shears

- 6'x10 ga. Niagara 16' throat, m. d.
- 8'x3/16' Ohl squaring, m. d.
- 13'x1/4' Hyde Park, 18' throat, m. d.
- 13'x14 ga. Ohl Squaring, belt.

Miscellaneous

- 1 1/4' & 1 1/2' Gridleys Model F.
- 50"x3/8' Niles Straightening Rolls.
- 10'x1/4' Benth Bending Rolls.
- 8' Jarecki Pipe Machine.
- No. 13 B. & S. Standard Gear Cutter.
- 103"x20' G. & E. Gear Cutter.
- 15' Gleason Gear Generators (2).
- 1 1/2' Landis Single Bolt Cutter, belt.
- No. 600 DeLaval Multiple Clarifier.

Others Too Numerous To Mention—Write

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Bliss-Consolidated No. 2.
Cleveland Nos. 5-1, 5 $\frac{1}{2}$ -1, 6-1, 8-1.
Federal Nos. 2, 3, 4.
Ferracute Nos. 13-C, 15-C, 16-C.
Loshbaugh-Jordan No. 3.
Minster No. 3.
Niagara No. 5.
R & K (American Can) Nos. 2, 3.
Toledo No. 3.
V & O Nos. 60, 2, 2 $\frac{1}{2}$, 3 $\frac{1}{2}$.
Walsh Nos. 3, 4.

High Speed Dieing

Henry & Wright 50, 75, 100 ton.

Punching

Ferracute Nos. P-2, P-3.
Toledo No. 32.

Horning

Ferracute CA-15.
Minster No. 10-2.
Toledo No. 14, Geared.
Straight Side
Ferracute No. DG-57 $\frac{1}{2}$ -A.

Dbl. Crank Overhanging

Ferracute No. ST-25.
Minster No. 60-2 $\frac{1}{2}$ -24.
Minster No. 60-3-32.
Toledo Nos. 200-C, 201-E, 203-C.

Dbl. Crank Straight Side

E. W. Bliss Co. Nos. 4-A-4-B.
Minster No. 50 5 $\frac{1}{2}$ -96".
Minster No. 50-7 $\frac{1}{2}$ -60".
Toledo Nos. 90-F, 90 H, 93-I, 94-F, 96-C.

PRODUCTION EQUIPMENT

Chucking Machines

Baird Six Spindle.
Cleveland 4"-4 $\frac{1}{2}$ "-8".
National Acme 4".

Drill Presses

Allen single and four spindle.
Avey single and two spindle.
W. F. & John Barnes No. 920.
Barnes 30".
Barnes 42" (arranged for lapping).
Bradford, Buffalo, Burke, Canedy-O.
Cincinnati single and three spindle.
Edlund Nos. 1-B, 2-B, 3-B, single,
two, three and four spindles.
Fosdick single, two and three spds.

Kingsbury: We can meet any specifications on these.

Leland-Gifford sgl. 2 & 3 spindle.
Taylor & Fenn sgl., 2, 3 & 4 spdl.

Grinders

Arter No. 132, Auto. cylindrical.
Arter No. 16" rotary surface.
Besly No. 8 Disc.
Brown & Sharpe No. 1 Universal,
No. 2 Universal, No. 11 Plain.
Bryant Nos. 3 and 12-A chucking.
Cincinnati 8x18 Cylindrical.
Diamond No. 6 Disc.
Diamond Surface.
Fitchburg Universal Cylindrical.

Grinders—Cont.

Wilmarth & Marmon Surface.
Pratt & Whitney 8" Surface, Rotary.
Pratt & Whitney 14" Vertical Surf.
Sellers Tool.

Universal Cylindrical Spline Broaching Machines

American 2 and 12 ton Vertical.
Foote-Burt No. 1 Surface.

Lapping Machines

Ashton-Russell Center.
Norton No. 1-F.

Barnes 42" Flat Plate.

Milling Machines

Pratt & Whitney 6"x14" Thread.
Standard No. 1 Hand Millers with
vertical spline milling head.

Plating Equipment

Semi-Automatic Tin.
Hot Tin Dip, complete.

Screw Machines

$\frac{1}{2}$ " Model M.
Cleveland $\frac{3}{8}$ " Model B, $\frac{1}{2}$ " Model B.
National-Acme 4".

Shapers

Cincinnati, 32".
Gould & Eberhardt 20".
Potter & Johnston 15".

Optimeters, scleroscopes, lite gauges, dial indicators, Shore monometers, surface and lapping plates, plug and snap gauges, etc.
Detailed lists on application or send us your needs.

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PICKED AT RANDOM

—A Few of the Many Bargains We Have to Offer—

Millers

Milwaukee No. 1½ B, s.p.d., Univ. Rock'd No. 2, s.p.d., Plain, NEW.
Cin. No. 2, rect. o.a., s.p.d., Univ. Brown & S. No. 2A, s.p.d., Univ.
Cincinnati No. 2, s.p.d., Plain. Brown & S. No. 2B, s.p.d., Plain.
No. 2 Kemp. Maximiller mtr. in b. Milwaukee No. 3B, s.p.d., Plain.
Note: All above with standard equipment, some with extra equipment.
—SIXTY ADDITIONAL UNIV. & PLAIN MILLERS IN STOCK—

Lathes

Monarch 18"x10' G. H. Motor in Base, Q. C. G. t. a., two chucks.
Hendey 20"x8' Q. C. G. Cone drive Lathe, Serial No. 20269.
Hendey 24"x9' Q. C. G. Cone drive Lathe, Serial No. 23788.

NOTE: All above with regular standard equipment and chucks.

OTHER LATHES IN STOCK FROM 12"x5' to 42"x18'.

Shapers

Gould & Eberhardt 16" B. G. V-way, motor drive.
Smith & Mills 16" B. G. V-way, cone drive, 90% new.
Gould & Eberhardt 20" B. G. V-way, m. d. (used less than 3 months).

NOTE: All above with standard equipment.

OTHER SHAPERS IN STOCK FROM 7" to 24".

Grinders

Ohio No. 3 Univ. Wet & Dry Tool & Cutter with attachments, enclosed motor drive with two motors.
Norton No. 2 Univ. Tool & Cutter with att. (used less than 2 months).
Reid No. 2 Surface, with 16"x6" magnetic chuck, C. S. drive.
Heald No. 55 Cylinder, with fixture.

All above with standard equipment.

Turret Lathes

Warner & Swasey No. 2 Hand, 1" capacity arr. for m. d. with motor.
Warner & Swasey No. 4 Univ., 1½" capacity, with t. a., with the finest assortment of equipment possible, 90% new.
Foster No. 3 Single Pulley Drive, 1½" capacity.
Acme No. 6, 2" capacity, arranged for motor drive with motor.

Note: All above have standard equipment and in each case extra equipment such as collets, box tools, etc.

(NUMEROUS OTHERS IN STOCK)

Planers

Whitcomb 24x24x6', single head.
Woodward & Powell 30x30x8, single head; Gray 30x30x10', two head.
Bement-Miles 60x60x16', four heads, two on rail, two on sides.

A Nice Assortment of Planer Tools With Each Machine.

Miscellaneous

Barnes No. 300, 20" General Purpose Production S. P. D. Drill, 1½" cap.
Bradley 200 lb. Upright Helve Hammer.
Pels No. M. E. 10 Brand New Combination Punch & Shear with coping attachment, motor drive with motor.
Schatz No. 16 Combination Punch & Shear.
Bliss No. 225 Gang Slitter, Brand New, with grinding att., arr. for m. d.
Bliss Nos. 19 and 21 Power Presses, 2" strokes, Brand New.
Bliss No. 21½ Geared Late Type Inc. Power Presses, 4" stroke.
V. & O. No. 104 Grd. Reducing Press, 7" str. with King Press. Toggle.
Brown & Sharpe No. 00 Automatic Screw Machines.

We carry a complete stock of used machine tools and would appreciate receiving your inquiries.

Also note we are in the market to buy any quantity of late type machine shop and tool room equipment and if you have anything for sale, kindly send us list.

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New York, N. Y.

Modern Machine Tools

GEARED HEAD ENGINE LATHES

- 90"x54" Pond, m. d., 2 carriages.
 48"x24" American Super-Productive,
 18 speed, p. r. t., latest type.
 30"x12" American, H. P. 12 speed,
 late, auto oiled.
 24"x8" American Medium Pattern,
 12 speed, auto oiled.
 22"x14" L. & S. Sel. Hd., late, 12 spd.
 20"x14" Hendey, 11 per.
 20"x8" American, 12 spd., auto oiled.
 20"x8" American 8 speed.
 20"x6" Hendey.
 18"x8" American, 12 spd., auto oiled.
 18"x8" American, 8 speed.
 18"x8" Lodge & S., 12 speed, taper.
 18"x6" American, 12 spd., auto oiled.
 16"x6" American, 8 speed.
 14"x8" Reed-Prentice.

CONE HEAD ENGINE LATHES

- 36"x18" American Heavy Pattern,
 3 step, taper.
 36"x11" American, 4 step.
 30"x14" Lodge & Shipley, 5 step.
 30"x12" Lodge & Shipley, 5 step.
 28-56"x12" Putnam Sl. Bed Ext. Cap.
 27"x12" Am. H. P., 3 step, bowl hd.
 25"x12" LeBlond, 3 step.
 24"x10" Greaves-Klusman, 3 step.
 21"x10" LeBlond, 3 step, taper.
 20"x14" Hendey Yoke Head, taper.
 20"x10" Boye & Emmes, 3 step.
 20"x8" American, 3 step, bowl head.
 18"x10" Hendey, 4 step.
 18"x10" Bradford, 3 step, taper.
 18"x8" Lodge & Shipley, 3 step.
 18"x8" Hendey, 4 step, yoke head.
 18"x8" American, 3 step.
 16"x6" Hendey, 4 step, taper.
 14"x6" Lodge & Shipley, 3 step.

DRILLS

- 2 1/2", 3", 4", 6" American Triple Pur.
 Radial, gear box on base drive.
 4", 6" American Tr. Purp. g. b. on arm.
 4" Dresser, gear box.
 4" Foadick, gear box.
 3 1/2", 5", Cincinnati Bick. gear box.
 7" Foadick, cone.
 4" Hammond Sensitive.
 20", 21", 22", 24", 28", 36" Cincinnati-
 Bickford upright.
 20", 22", 22 1/2", 26", 34" W. F. & J.
 Barnes upright.
 22" Barnes all geared self-oiling.
 4-sp. 22" Barnes all geared self-oiling.
 1, 2, 4 spindle Leland & Gifford H. S.
 Ball Bearing.
 1, 4, 6 spindle No. 3 Avey H.S. B.B.
 4 spindle Demco B. B.
 1, 2, 4, 6 spindle Allen B. B.
 1, 6 spindle No. 1/2 Avey, latest.
 1, 2, 4 spindle Avey, No. 2
 No. 30 Natco Multiple.
 No. 216, 220 Baker 2 spindle H. D.
 No. 4, 22 Colburn Mfg. latest.

MILLING MACHINES

- No. 2, 3, 4 Cincinnati universal s. p. d.,
 flanged spindle.
 No. 2, 3 Cincinnati universal, cone.
 No. 1 1/2, 2, 3 Brown & S. Univ., cone.
 No. 3 Kempsmith Universal, cone.
 Sloan & Chace No. 2 Univ. Hand.
 No. 3, 4 Cincinnati Vertical, s. p. d.
 No. 3V Toledo Vertical, s. p. d.
 No. 4 Kempsmith Vert. Maxi, m. d.
 24" Cincinnati automatic duplex, m. d.,
 widened pattern.
 18", 24" Cin. Auto. Duplex, belt.
 24" Cincinnati Auto. Duplex, m. d.
 18", 24", 48" Cincinnati plain, auto.
 No. 33 Kempsmith Mfg.
 No. 21 Brown & Sharpe Mfg.
 6x14" Pratt & Whitney Thread.
 4" Pratt & Whitney Spine.
 No. 2, 3, 4, 5 Cincinnati Plain, s. p.
 d., flanged spindle.
 No. 4 Cincinnati Plain, rect. overarm,
 Timken equipped.
 No. 1, 1 1/2, 2, 3, 4 Cincinnati pl., cone.
 No. 3B, 4B Heavy, 5B Hvy. Brown &
 Sharpe plain, p. r. t. late.
 No. 1, 3 Kempsmith plain, cone.
 No. 0 Steptoe Plain.
 No. 1 1/2, 2, 2H, 3 B. & S. Pl., cone.
 No. 2B, 3B Milwaukee Pl., dbl. overarm
 No. 2 1/2 B Milwaukee Vertical.
 No. 1 United States Hand.
 No. 6 Whitney Hand.

GRINDERS

- No. 72A3 Heald Size Matic, two m. d.
 No. 70 Heald Internal, clutch head.
 No. 50, 55, 60, 65 Heald Cylinder.
 No. 25 Heald Rot. Suf., hyd., feed.
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Millers, No. 3 B. & S. vert.; No. 3 Kemp. pl.; Nos. 1 & 2 B. & S. pl.

Bliss toggle, horn.; No. C52 Ferracut; No. C92 Ferracut notching.

Roll, 10' Bertsch, drop end housing. Screw mchs., Nos. 0, 1, 3, 7 Foster;

No. 4 W. & S. univ., g. h., arr. m. d. Shapers, 15" P. & J.; 16" G. & E.; 24" Milwaukee, b. g.; 24" Cinc., crank planer type.

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3 3/4" Acme Turret Lathe with chucking and bar equipment.

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No. 6 LeBlond "Multi-Cut" Lathe, 98% new.

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No. 1/2 Van Norman Duplex Miller.

8"x12" Rolling Mill.

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120" Swing, Betts, two hds.; motor.
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72" Swing, N.-B.-P., two hds.; mtr.
60" Swing, N.-B.-P., two hds.; mtr.
60" Swing, Putnam, two hds.; mtr.
54" Swing, Putnam, two hds.; mtr.
44" Swing, Putnam, two hds.; mtr.
30" Swing, Colburn, tur. hd.; belt.
24" Swing, Bullard Vertical Turret Lathe; motor.

Planers

138"x84"x30' Pond, four heads.
120"x120"x20' Niles, four heads.
96"x96"x24' Niles, four heads.
96"x96"x16' Niles, four heads.
72"x72"x20' Pond, four heads.
72"x72"x16' Putnam, four heads.
72"x72"x14' Gray, 4 hds.; Rev. mtr.
72"x60"x16' Gray, four heads.
60"x60"x30' Putnam, four heads.
60"x60"x18' Niles, four heads.
60"x60"x12' N.-B.-P. 4 hds., Rev. mtr.
60"x60"x11' Sellers, 3 hds., Rev. mtr.
60"x48"x10' Putnam, three heads.
48"x48"x16' Putnam, four heads.
42"x42"x20' Putnam, four heads.
36"x36"x10' W. & P., two heads.
36"x36"x10' W. & P. 2 hds., Rev. mtr.
30"x30"x10' Putnam, two heads.
30"x30"x8' Putnam, two heads.
28"x28"x8' Putnam, one head.
26"x26"x8' Putnam, two heads.
26"x26"x6' Putnam, one head.
24"x24"x6' Putnam, one head.
22"x22"x6' Putnam, one head.

"Planer-Type" Milling Mchs.

48"x48"x12' Ingersoll, Slab; motor.
42"x36"x8' Ingersoll, slab.
36"x36"x18' Ingersoll, four heads.
36"x36"x10' Ingersoll, Slab.

DUPLEX—Various sizes—Large and small.

Other Milling Machines

84" diam. table, Rotary Continuous Miller, Ingersoll, 3 milling heads; almost new.

No. 31 Davlieg Supermil; almost new

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No. 6 Becker, Vertical.
No. 5 Brown & Sharpe, Plain.
No. 4 LeBlond, Plain.
No. 4 Hendey, Plain; extra cir. tbl.
No. 3-B Hendey, Universal.
No. 3 Cincinnati, Plain.
No. 3 Brown & Sharpe, Plain.
No. 2-B Milwaukee, Dbl. over-arm.
No. 2 Brown & Sharpe, Plain.
No. 2 Cincinnati, Plain.
No. 1-B Brown & Sharpe, Plain.

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6' Arm, Dreses, speed box.
6' Arm, American, speed box.
6' Arm, American, motor on arm.
6' Arm, Niles-Bement-Pond, (5).
6' Arm, Western.
6' Arm, Baush.
5' Arm, Dreses, speed box (3).
4' Arm, Niles.
3' Arm, Western, (never used).

Multiple and Upright Drills

16-Spd. P. & W. No. 13, Rect. hd.
10-Spindle, Natco, rectangular hd.
8-Spindle, Baush, round head.
6-Spindle, Allen, ball bearing.
4-Spindle, Moline.
60" Niles, Upright.
No. 2 Colburn, Heavy Duty (8).
14" Allen, Ball bearing (7 available).
Fifty (50) other machines—various sizes—Rockford, Barnes, Cincinnati, etc.

Over Seventy-five (75) Lathes

Some of the sizes include:

60" Swing, 20' bed, Putnam.
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36" Swing, 42' bed, Niles-Bement-P.
36" Swing, 30' bed, Niles-Bement-P.
36" Swing, 18' bed, Fitchburg.
26" Swing, 14' bed, American.
36" Swing, 14' bed, Lodge & Shipley.
34" Swing, 16' bed, Putnam.
30" Swing, 18' bed, Lodge & Shipley.
28" Swing, 40' bed, Putnam.

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100" Niles-Bement-Pond.
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LATHES

96"x54" Niles-Bement-Pond Grd.
Head, with 2 carriages.
42"x24" American Geared Head.

36"x32" LeBlond, with 2 carriages.
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26"x24" Putnam.

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2" Gridley Mod. "G" 4 Sp. Auto. Screw Mche., M. D., Ser No. 17, 107-E.
6' American Triple Purpose Plain Radial Drill, Motor On Arm.
6' American Triple Geared Plain Radial Drill, Single Pulley Drive.
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16' Southwark Plate Planer, 1¼" capacity, motor drive.
No. 13 Brown & Sharpe Universal and Tool Grinder.
Nos. 60 & 65 Heald Cylinder Grinders.
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12"x 5' Cleveland, geared head.
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16" Smith & Mills, motor drive.
16" Queen City, back geared crank.

20" Smith & Mills, back grd. crank.
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4-spindle Demco bench (new).
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3'6" Fosdick Radial.

5' Baush radial.
22", 24", 26" and 32" sliding head.
20" Plain and complete.

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Blowers, positive pressure.

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- 1—No. 26 Williams & White bulldozer.
- 1—No. 4 Williams & White bulldozer.
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Bending Roll, 7' Motor Driven, Drop End Housing, ½" Plate.
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 Press, No. 6½ Bliss Straight Side, 8" Stroke, 54" between uprights.
 Presses, (2) No. 60¼ Toledo Straight Side, Tie Rod, Stroke 18" Bed 58"x50", Weight 225,000 lbs.
 Presses, Hydraulic Wheel, 180, 250, 400 and 600 ton. Belt & M. D.
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- 1-No. 3 Brown & Sharpe Universal Grinder, with c/s.
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- 1-No. 2 Diamond 12x36 Surface Grinder, with c/s.
- 1-8" Heald Rotary Surface Grinder, with 8" mag. chuck and c/s.
- 1-No. 16 Blanchard m. d. Surface Grinder with 30" chuck.
- 1-12" Bristol Rotary Surface Grinder.
- 1-30x84" Diamond Face Grinder.
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- 1-Union Twist Drill Hob Grinder.
- 1-No. 72-A-3 Heald Internal Grinder, motor drive.

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Brakes, Hand 3 to 12½; Power, 6½ ¾; 8½ ¼; 12½ ¼.
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No. 30 Bliss; Horn, 14, 14½ Toledo;
No. 24, 39, 39-B Bliss; S.S. No. 74½
Bliss; D.C. No. 202-E & 91-C Tol.
Rolls, 42" 11 ga.; 10" 18"; 8½ ¾; 16½ ¾

JUST PURCHASED—HARD-TO-FIND TOOLS

Shears, Power 10½ 10 ga. all steel.
Shears, Power, 12½ ¾, M. D.
Shears, Power, 10½ ¾ Niagara.
Press Brakes, 10½ ¾ Chicago Steel.
Arc Welder, 300 Amp. Lincoln.

Press Brake, 12½ ¾ Cincinnati.
Band Saw, No. 8 Marvel, M. D.
Shear, Serp. ½ Ryerson, M. D.
Rolls, 10½ ¾ Bertsch, M. D.
Shaper, 24" Gould & E., S. P. D.

Gear Hobbers, No. 18-H Gould & Eberhardt, No. 12 Barber-Colman.
Lathes, Hendey 20"x12½; P. & W.: 14"x6½; 24"x16½ Cincinnati 16"x8½; American; 24"x12½; 30"x18½.
Millers, No. 2 Van Norman, No. 3 Kempa Univ.; No. 1, 2, 3 Pl. Kempa.
Presses, deep throat, Nos. 15 & 17.

Shapers, G. & E. 16", 20", 24"; 28" American S. P. D. 24" Cincinnati Shaper-Planer.
Shrs., pwr. eq. 36" 18; 72" 14; 8½ 16; 8½ 14; 62" ¾; 10½ ¾.
Spinn. Lathes, Pry. 22"; Gap 27/60".
Welders, 10 K. W. Federal 24" arma.
H-D-48 Amer. Electric 2 pcs. ¼".

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- 3-24" Bullards, New Era Type.
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 4" Fostick Horizontal Boring, Milling and Drilling Machine.
 2½" Cleveland Horizontal Boring Miller and Driller.
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 42" Niles Car Wheel Lathe m. d.

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 No. 4 LeBlond Universal.
 No. 1-B K & T. Dbl. overarm\$ 750.
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Above prices rebuilt
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- 37"x16" LeBlond, cone drive.

- 6" Gisholt, motor driven, A. C. mtr.
 3-21"x10" LeBlond grd. head taper.
 38"x18" American, cone drive chuck.
 20"x10" Hendey, geared head taper.

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- 4" Acme, equip. with 3" Landis hd.
 2" National with Landis head, A.C. motor driven.
 3½" Landis, lead screw.

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- 24" Potter & Johnson, tool room.
 16" Milwaukee, cone drive.
 4-16" Ohio, cone drive.
 Fellows No. 612 Gear Shaper.

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No. 0 B. & S. Hi Speed Tur. Formers, serials 5786-5787 (2).

Nos. 00, 0, 2 & 2G B. & S. Auto. (50)

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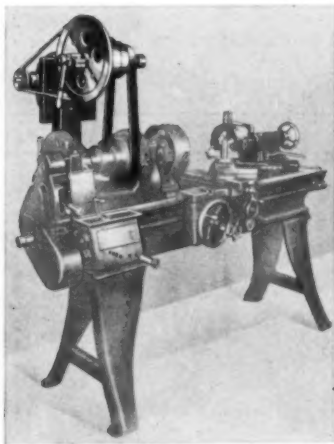
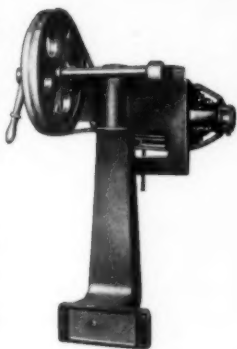
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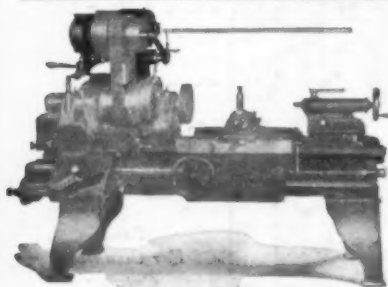
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